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CHANNEL TUNNEL.

REPORT OF A MEETING

OF THE MEMBERS OF THE

Submarine Continental Railway Company

LIMITED

HELD AT THE CHARING CROSS HOTEL

On FRIDAY the 20th JANUARY, 1882.

SIR EDWARD WILLIAM WATKIN, Bart., M.P., in the Chair.

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The Submarine Continental Railway Company

LIMITED.

Report of Proceedings at a Meeting of the Members held on Friday, the 20th January, 1882, *at the Charing Cross Hotel.*

SIR E. W. WATKIN, BART., M.P., presiding.

THE CHAIRMAN said,—Gentlemen, this is a meeting of the members of the Submarine Continental Railway Company. It is not a public meeting, and therefore I shall be enabled to-day, with your kind permission, to speak probably at some greater length and with less embarrassment than if I were addressing an assembly a portion of which had an interest not the interest of this undertaking. (Hear, hear.) I think you will agree with me, gentlemen, that to connect the Continent with England is a work without an equal among all the labours until now accomplished by the hand of man. I cannot myself realise, either a better, or a greater, work, and it seems to me that the only question left with regard to it is—its practicability. Can it be constructed cheaply, quickly and safely, by such an union of interests on the two sides of the Channel—essential to the permanent success of any enterprise of the kind.

Preliminary.

I know there are some—I was going to say old-fashioned—people, who think that to connect Europe and England would be damaging to England. My humble judgment is, that the balance of forces, material and moral, is to the advantage of England; that so far from England being, as it were, diluted

with the ideas and the arts of the Continent, the Continent would benefit by better and closer access to the freedom and industry of England; while the interchange of all that is good, the friendly competitions of labour in all its departments would become a common heritage of blessing to the world at large. (Cheers.) It has always seemed to me, also, looking to the completion of the Continental system of railways, that England, without some connection of this kind, would gravitate towards isolation. You will ponder upon the effect of connecting thousands of miles of country on the Continent on the one side, and hundreds of miles in England on the other. It is obvious that the Channel becomes every year more and more of a break, retarding and embarrassing the great interchanges of nations: the Continent day by day will intercommunicate more and more with itself, less and less with England. A French engineer, to whom I shall refer in a while, said, "A manifest "sign of the religious spirit of the times, is the general "propensity of nations to throw down the natural or artificial "ramparts behind which they have so long entrenched their an-"tagonism." Those were the words of M. Thomé de Gamond. An Englishman, Mr. Cobden, speaking on the question of a tunnel between England and the Continent, said:—"It is not "enough to put the Government and the higher classes of each "country on a friendly footing; that good feeling ought to "penetrate the masses of the two nations: and it is our duty to "multiply all the means for an incessant contact, which will "certainly put an end to superannuated prejudices and old "ideas of antagonism." (Applause.)

The idea in the mind of Mr. Cobden was that safe and rapid communication between country and country on the shortest lines of distance, and therefore of time, was the proper corollary of free trade; that you could not have free exchange in its highest development without free and universal means of transit. It is for our government to tell us, in no uncertain voice, whether their policy is based upon a state of peace or of war with nations. Do they agree with M. de Gamond and Mr. Cobden, or do they wish to stop our efforts boldly by denouncing them, or weakly by shoulder-shrugging and discouragement? It seems to me that the example of the Suez Canal, of the pro-

posed Panama Canal, of the completed Mont Cenis Tunnel, of the completed St. Gothard Tunnel, of the proposed tunnel under the Pyrenees to connect France and Spain, and of the proposal to connect Sicily and Italy, under the deep sea—that these are all instances of the craving of nations after brotherhood and union. Those who object to connect England and the Continent would revert to the old Japanese policy of isolation—or rather resume the disused old Japanese policy of isolation—and establish that policy for England. (Hear, hear.)

Leadership.

Now, the position which I have taken as Chairman of your Company, so long as it is your wish that I should occupy that position, is one which I shall be only too glad to hand over to some stronger man ("No"), provided that stronger man were to appear. I only took up this question actively when I found that some men, who thought themselves great and capable, had utterly and signally failed—failed in their plans, and failed to execute what they had chosen to design. I saw no other thorough believer ready to make the sacrifice. I tried to unite discordant forces—and, so far, I have failed to find a self-abnegation equal to my own.

Tunnels.

I have had a great deal to do with tunnels. Including the East London, a total length of 37 miles of tunnel. If a man can conduct, in construction and in working, 37 miles of tunnel, he is very likely to succeed in assisting to make 21 miles. (Hear, and laughter.) But there is one fact I want you to bear in mind—I want it to be before everybody, and that is this: that in England, Scotland and Wales there are 58,000 miles of underground rail and road-way. That is to say, the underground workings connected with the mines of our country altogether present 58,000 miles. I think, then, if Englishmen can manage to construct and use for the development of minerals 58,000 miles of underground road, deep down in the earth—some also, under the sea—you and I and the rest of us would not have much

difficulty in adding 10½ miles, under a shallow channel to the high roads of the Queen. (Hear, hear.)

The Agreement before the Meeting.

The resolution I have to move is for the approval of an agreement between your Company and the South Eastern, and I am happy to tell you that the South Eastern shareholders, with one single dissentient I think, yesterday approved that agreement. The only criticism made was with reference to a clause which provided for the contingency of our Company, *i. e.*, the Submarine Company, not making satisfactory progress with the works within three years. It was thought—and it was a most fair observation—that it would not be quite just, in case what the French call *force majeure* resisted the prosecution of your works, that the South Eastern Company should come in and receive back again at a valuation that which they had sold you. Now the question is—What are they going to sell you?

This is a property: it is not a project. (Hear, hear.) I wish you to keep that idea in your mind. It is a property consisting in the first place of half-a-mile of gallery, of a width of 7 feet, from the Abbot's Cliff Tunnel, in the direction of the Shakespeare Tunnel. It is a property comprising a considerable amount of machinery and material at the No. 2 Shaft, a shaft sunk down into the grey chalk, from the Western end of the Shakespeare Cliff, and which will extend, at the period mentioned in this agreement, to 1,000 yards in the easterly direction. Thus you will have, practically speaking, more than a mile,—1$\frac{1}{10}$ miles I think it will be,—of completed experimental gallery. You will have two or three shafts, and you will have the machinery and appliances. You will also have the benefit of contracts, made for the use of patented machinery and appliances. In addition to that, a most important property will be handed over to you, a property much of which Parliament permitted the South Eastern Company to purchase last year, and which comprises, I think (Mr. Stevens, the solicitor of the South Eastern Railway Company, will perhaps correct me if I am

wrong), something like three miles of foreshore, and the rights connected with it. It comprises also a considerable amount of land, and, in fact, everything necessary to make the tunnel and provide terminal accommodation.

The narrow Strip, through which, only, a Tunnel can be easily made.

I said yesterday, and I repeat to-day, that twenty years' observations,—and I myself have been rather collating the observations of others than making them myself,—have convinced me that there is a strip of about three miles, or very little more or less, on the French coast and on the English coast, which limits the surface which an under-sea tunnel can be successfully accomplished. The tunnel must be made,—if at all in your time, and mine—"in the dry." If you have to pump the land drainage, or the sea, or to timber your structures in the clay, the construction of the tunnel is impossible. The enormous cost would render it totally out of the question. The enormous time would consume a generation. We have acquired, by the authority of Parliament, and we are going to hand over to you (I am now speaking as a South Eastern proprietor) that valuable piece of coast from which, alone on the English side, it can be successfully prosecuted. Under those circumstances, I think that what you are asked to take over is a valuable property. No other organization of men, either in this country or in France, has got so powerful an interest—Act of Parliament interest in this question. (Applause.)

Terms of the Agreement.

Then you may say: "That may be all very well, that is a "very fine property, and the work is feasible, but on what "terms?" Well, the terms are simply these, that what the South Eastern Company have outlaid, including carriage of materials, and services of their staff, and interest on their dead money, shall be paid to them in cash; and that then, in consideration of their carrying materials and men for the construction of the permanent tunnel at very moderate prices—not more than one-half the ordinary rates—a very great benefit

in the construction of the permanent tunnel; in consideration of that and of the goodwill and assistance they can give you, they shall have, also, 20,000 fully paid-up shares of £1 each.

For all this, I repeat, you get land and rights; you get property and rights over 3 miles of the coast; you get $1\frac{1}{10}$ miles I think it will be, in two pieces, of 7 foot experimental tunnel, useful, of course, in the construction of the permanent tunnel; and all for a cash payment of £30,000. (Hear, hear.) Now, those who in 1874 or 1875, I forget which, prosecuted a scheme and registered a company for the making of a tunnel, their proposal was to do less than half of what you have had done, and without any land or land rights, for a sum of £80,000. Why was that? Because these gentlemen—great engineers and people of great ideas—made a gross geological and engineering mistake, and they proposed to do things in an expensive and reckless manner. They proposed to line the shafts going through the chalk with brickwork, when they ought certainly to have known that a very little timber-tubbing at the top would keep out the surface-water, and forgetting, or not knowing the fact that the chalk would stand on its own legs (laughter), so that a cheap shaft was the only thing necessary for experiment. I say, practically, you get a great deal more than twice as much as these gentlemen proposed to give their shareholders, for little more than one-third the money. (Applause.)

Issue of Capital.

Now, upon the question of our Capital; first of all, I tell you, your Capital has been placed. When I say "placed," there are a very few thousand shares—I forget the exact number reserved for those who may be able to assist us hereafter in those scientific and other experiences which we shall require to have advice upon. They, of course, could be disposed of in a moment. The Shares are, as I humbly conceive—but let every one decide for himself—a good property. They have been selling—so gentlemen more accustomed to the Stock Exchange than I am tell me—at a good premium. Therefore you have got your Capital safe and secure: you are on hard and sound

ground; you can pay your way; you can complete your works, if you please, to the centre of the Channel; and you are in a position, therefore, to treat with anybody else, and to conduct your works exactly as you wish.

History of the Channel Tunnel Project.

Now, with regard to this question of the Tunnel: the history of it is peculiar and interesting, and I hope if I tax your patience in telling it you will forgive me. I am sometimes, as an Englishman of hard work and no nonsense, indignant to find English engineers, the great confraternity of Great George Street, not only quarrelling over their work, and their clients, but refusing credit to French engineers. Almost everything predicted, and a great deal of that discovered, with regard to the Channel Tunnel, is French, and French only. The first record we find about a proposition to pierce a tunnel is in the days of the First Consul. A Frenchman, M. Mathieu, proposed to the First Consul—the Great Napoleon as he was called—to make a tunnel under the Channel for connecting England and France. Whether he intended it as a work of war or peace I do not know, but I am bound to say that, in the then state of what we may call submarine geology, it was a very capable and able plan. It consisted practically of two galleries. One was to be used for drainage purposes, the other for the roadway. There were no railways in those days, and his proposal was that the traffic should be worked by relays of horses, which would gallop through the tunnel in about an hour.

Well, nothing more, I think, was done in France till an eminent French engineer, whom I have already referred to—M. Thomé de Gamond—became an enthusiast upon this question; and, in my humble judgment, M. de Gamond ought to be looked upon as the father of the more modern enterprise. If there ever is a tunnel between England and the Continent, and of the probability of it, I for one speak, as far as my lights go, in the most sanguine and positive terms; then I say, the man to whom the great credit ought to be given was that enterprising and far-sighted Frenchman. He is dead. But, gentlemen, dead or living, you and I will not rob him of one atom of his

fame. (Applause.) He made several proposals. Beginning in 1834, he proposed in one case to place an iron tube at the bottom of the Channel.

But to go back. Following M. Mathieu, another Frenchman, Dr. Payerne, proposed to connect the Continent and England by a colossal bridge. Then MM. Franchot and Tessié proposed to lay on the bed of the Channel an iron tube. Then a ferry between Blancnez and the South Foreland was suggested in 1837: the two sides of the Channel were to be made to approach by works of masonry, and the narrowed Channel was to be crossed by huge ships. Later on, that most able engineer, the late Mr. Joseph Locke, improved upon this idea. From time to time English engineers have built upon these ideas. Mr. Bateman laid hold of the idea of a tube. Mr. Fowler proposed a ferry which should take over whole trains. And Mr. Low, Mr. Brunlees and Mr. Hawkshaw have, in one fashion or another, tried to work out the original idea of M. Mathieu. A good many gentlemen in England have been rather acting as "good merchants" in other people's ideas, than conceiving anything original and practical of their own. (Hear, hear.)

The Prince Consort and the Tunnel.

In 1857 M. Thomé de Gamond came to England. He explained his plans to the principal English engineers, and—more important—he had interviews with the great Prince Consort and with Lord Palmerston. Allow me to give you his own words. He says:—

"The first time that we had an opportunity of talking to "Lord Palmerston on the subject of the Submarine Tunnel, "we found him at first rather close. (This is a Frenchman's English you will see.)

"What! you pretend to ask us to contribute to a work, the "object of which is to shorten a distance which we find already "too short.

"We expressed to him our wish to talk of it to Prince Albert "in his presence, and to this he very kindly consented.

"The Prince Consort had supported this project with truly "enthusiastic sympathy. His reception was, therefore, most

" kind. He entered into conversation, in which the Prince " unfolded all the advantages which his elevated mind foresaw " for England in the creation of a road to the Continent.

" Lord Palmerston, without losing that perfectly courteous " tone which was habitual with him, made, however, a remark " to the Prince which was very rude at bottom: 'You would " 'think quite differently if you had been born in this island.' (Laughter.)

" We were ourselves perfectly stupefied with this unexpected " apostrophe. To make Prince Albert, whose love of the " country of his adoption was well known, feel that he was a " foreigner, was shocking to us, and we felt deeply hurt.

" Some days after we went to excuse ourselves with the " Prince Consort for having been the cause of this disgraceful " incident. The Prince appeared not to have been offended, " and told us that he had received this innocent dart as one of " the frequent sallies in which Pam dealt. Then he added, " that he had said a few words about the Submarine Tunnel to " the Queen. Her Majesty had been graciously pleased to " answer him in these good words: 'You may tell the French " 'engineer, that if he can accomplish it, I will give him my " 'blessing in my own name, and in the name of all the Ladies " 'of England.'"

Well, gentlemen, I think you will join with me in saying that that is an interesting document. (Cheers.)

An Island in the Channel.

The tunnel idea divided itself practically into two plans: one was to make the tunnel to the shoal called the Varne, in the middle of the Channel, providing a sort of island where ships could take refuge and merchandize be exchanged: and the other was to make the tunnel right through, without stopping anywhere. Clearly the use of great concrete blocks would enable an island to be made in the three-mile limit I have spoken of, easily and cheaply; and by making it four " faces," instead of two, could be worked from, and time saved in consequence.

With regard to the Island, I suggested to the present

President of the French Channel Tunnel Company, M. Léon Say, the President of the Senate, whether we might not revive that idea. His answer, following the advice of French engineers, was, that if they found an island in the way the first thing they should do would be to take it away. (Laughter.) Under those circumstances we have, perhaps, all come to the understanding that it would be as well to have the tunnel begin at one end and end at the other, without any intermediate landing place of any kind. We have been told by one of our engineers that he has been working at this question of the tunnel for sixteen years. Now, I should like to ask him these two questions. How much of his plans does he claim as original? and what has he actually done or discovered in those sixteen years? I don't believe in men talking about great projects—paying visits to Paris—making good dinners (laughter) —writing long foolscap letters and reports about their ideas. The Napoleonic test of a man, you know, was "What has he done?" (Hear, hear.) I want to know from these gentlemen what they have "done." Because if they have done nothing, and I can show you that the South Eastern shareholders have done a great deal, I think they have a right to hold up their heads, and claim to lead in the race, where other people have fallen a long way behind. (Cheers.) I also contend for the South Eastern party that they have made the question of the tunnel what Mr. Gladstone calls "practical politics." I do not believe anybody—I mean of the great mass of men—believed in the Channel Tunnel—till we, the South Eastern, pledged our reputation, and showed our experience to back it, that the tunnel was practicable—easily practicable, that it could be made in a short time, and that the execution of it could be carried out so cheaply and rapidly that if it was made it must be eminently remunerative.

The moment you brought over the gentlemen of the French tunnel to see your works at Abbot's Cliff, and explained to them what you were doing, and intended to do, from that very moment, French tunnel securities became popular on the Parisian Stock Exchange. I do not mean to say that that goes for very much. But people were frightened at the tunnel for many reasons. One was the question of cost. If I remember rightly

the pamphlet issued in 1874 or 1875 said, "That their estimate was £4,000,000 of money, but that the engineers, for the purpose of precaution, had doubled it." Now, if I wanted to build a house, the estimate for which was £1,000, I should think very little of an architect who came to me and said, "It may be "a very little more, but in order to be perfectly safe, and to "protect my reputation, I will just double it and say £2,000." (Laughter.) I do not think that would be the proceeding of a good architect, and I do not think that doubling an admittedly unknown quantity gives the title of "great engineer." Now, I am here to tell you that the idea of £8,000,000 or £4,000,000 is simply an engineering absurdity. It can be made for a wonderfully less sum than all that. Why? First, because we "work in the dry." Secondly, because we work by machinery. Working "in the dry" simply means this,—I am only quoting a phrase which is pregnant with instruction—used on both sides of the Channel by experienced engineers: that is, to make the tunnel "you must find the grey chalk, and you must "follow it."

Let me here mention an incident related by M. Thomé de Gamond. So anxious was he to obtain the most correct information, that he had himself lowered down in different parts of the Channel as a diver; and on the last occasion, when he tried it somewhere near to the Varne, and brought up a piece of the floor of the sea, he had a very narrow escape. I will give it you in his own words:—

"In these rapid descents I could only cast a very furtive "glance over the bed of the sea, which was in this place quite "dark when the sun was obscured. This darkness arose from "the very deep colour of the ground in that region. But when "the sun shone—and this was the case during my two first "descents—the liquid medium assumed a rather milky appear-"ance, transparent enough, and one could very well distinguish "the remains of white shells, with which the dark bed of the "sea seemed to be strewn. I even saw spotted bodies pass with "a rapid movement, and these I judged to be shoals of flat fish "of the sole or skate family, disturbed by my presence.

"It was on ascending from my third and last visit to the be[d] "of the sea that I was attacked by some carnivorous fish, whi[ch]

" seized me by the legs and arms. One of them bit me on the " chin, and would at the same time have attacked my throat, if " it had not been preserved by a thick handkerchief. I ridded " myself promptly of this one, which caused me sharp pain, and " which left me as soon as my hand touched it. I thought my- " self lost. However, preserved more by an instinctive energy " than an act of volition, I was fortunate enough not to open my " mouth, and I re-appeared on the top of the water, after being " immersed fifty-two seconds. My men saw one of the monsters " which had assailed me, and which did not leave me until I had " reached the surface. They were conger-eels."

Mr. Low.

But there is another gentleman to whom scant justice has been meted out, I mean Mr. Wm. Low, of Wrexham. He was the man who propounded, as a mining engineer, the idea of two separate tunnels, the object being that one should ventilate the other. To put it in familiar language, that, as with the up-cast and down-cast shaft in a colliery, the one ventilates the other by producing draught, so, horizontally, these two tunnels would, in his opinion, answer the same purpose.

Mr. Low, who is a member of this Company, like yourselves, and is also one of your committee of advice, writes;—

" Whilst engaged in my professional duties as manager of " the Vron Colliery,—it flashed upon my mind, how easy to " adopt the plan of ventilation used in all collieries. I was at " that time raising a seam of coal lying 120 ft. below the level of " the sea, and the surface of the shafts were upwards of 600 ft. " above the level of the sea.

" Some time after, I printed a short account of my plan, and " circulated it.

" I conceived the idea of laying it before the late Emperor " Napoleon, and applied early in 1867 for letters of introduc- " tion from the late Colonel Biddulph, M.P. He gave me a " letter to Lord Stanley, the present Earl of Derby, at that time " Secretary for Foreign Affairs, and he gave me a letter to Earl " Cowley, our Ambassador in Paris. I proceeded to Paris ac- " companied by my partner.

" We waited upon the Ambassador, and producing the letter " from Lord Stanley, I explained that I wanted an audience of " the Emperor.

" Earl Cowley said an audience was impossible, at least that " he could not obtain one for me, and he thought I had better " get my plans hung up in the Exhibition. I gave my reasons " for not doing so, when he asked, 'If I had friends in Paris?' " I answered, 'None; that I had come, hoping to obtain an " 'audience, and should I not succeed, I could only return home.'

" The interview ended, we were on the point of retiring, when " the Earl, calling me back, said, 'I will give you a letter to " 'General Fleury, perhaps he might be able to obtain what you " 'require.' I thanked Earl Cowley.

" I had considerable difficulty in delivering this letter per- " sonally, but the difficulty overcome, I saw the General, who " was accompanied by the editor of a French newspaper. I " explained my plans and sections, and after a long interview " of nearly two hours, General Fleury expressed himself, much " pleased with my explanation, and stated that I should hear " from him in a few days.

" I did so, and the 17th day of April, 1867, was appointed " for my appearing at the Tuilleries.

" After waiting a short time, the Emperor appeared, attended " by the Duc de Bassano and another officer. I first addressed " the Emperor by regretting I could not speak French; he " expressing himself in English, said: 'You do not speak " 'French.' I, without further hesitation unrolled my section, " and explained my plans, stating that nearly thirteen years " previously a French engineer, M. Thomé de Gamond, had " proposed a scheme for tunnelling under the Channel, and that " had he adopted the mode of constructing suggested by me, " I thought that by this time the tunnel would have been an " accomplished fact. I explained my mode of ventilation, and " during the whole of my explanations the Emperor, with his " head on one side, listened attentively, speaking not a word.

" When I had concluded the mode of ventilation, pointing " the course the ventilation would take, until the junction of " the works near mid-channel: the Emperor at once understood, " and expressed himself, smiling—'I understand you will send

" 'English air, by our tunnel, from England to France, and we " 'will repay it, by sending a current of French air by the " 'opposite tunnel.' He then held up his finger to the Duc " de Bassano and the other officer to come forward, and he " explained the plans to them.

" He put several questions, as to the depth of the Channel, " the pressure upon the tunnel, and asked if a company were " formed, or a prospectus ready, I answered, 'No,' wishing " first to learn whether he would approve of such a scheme, as " if not, it would be useless doing any more in the matter. He " at once answered, 'I should be glad to see it done; as soon as " 'your prospectus is ready send it to me, and I will lay it before " 'my ministers, and do all I can to support it.' I then " retired.

" Mr. Isaac Shone, viewer to the Duke of Westminster, gave " me a letter to Lord Richard Grosvenor. Lord Richard said he " had just been examining the shores of France in reference to " a deep water harbour. He brought the matter before Mr. John " Fowler.

" Mr. Fowler wrote to Lord Richard Grosvenor, that he saw " three great difficulties. First, the cost of construction. Second, " the time in executing. Third, unforeseen difficulties.

" Mr. Fowler at that time had given his mind to carrying " trains over on large steamers.

" Lord Richard Grosvenor, after receiving Mr. Fowler's " opinion of the difficulties, stated that he could no longer be " chairman, or support the scheme.

" Shortly after, Captain Tyler became a member, and he " suggested Mr. Hawkshaw as one of the engineers. My idea " was—two single railway tunnels from the beginning."

Fallacies and fresh Explorations.

I believe that the great fallacy which has been indulged in has been the idea that, in order to get to the grey chalk you must of necessity go through the upper chalk. Well, our friends on the French side did that. I do not think they need have done it. I think they were to some extent misled, geologically, and on one occasion they had to pump, I think, 1,000 gallons of

water per minute. Probably, had they gone a little more to the westward, they would have avoided water. We have taken the other course. We have "found the grey chalk," between Folkestone and Dover, and "followed it." And, when I have the honour of taking you, gentlemen, down into the tunnel, in a month or two, you will find, as I find, and others find, that it is perfectly dry, that the air is perfectly pure, and the work appears so easy when you see the revolution of the machine that cuts the chalk away, and delivers it from the machine into buckets and then into wagons—it seems so simple a business, you almost imagine that some people must have been playing with us for years, by making a great mystery of so cheap and so simple though so gigantic a work. (Hear, hear.) I saw, in reading over some papers last night—I think the Reports of Civil Engineers—that Mr. Hawkshaw said, in 1873 or 1874, that the chief difficulty in the way would be found on the sea-coast; and he enunciated this most erroneous piece of geological information: "The grey chalk is not reached on either shore "without going through the white chalk." Why, surely everyone knows that it crops out near Folkestone junction.

I can only imagine from these mistakes that Sir J. Hawkshaw was not exactly a geologist, and that the geologist he employed was not exactly an engineer (laughter). At all events, gentlemen, what was done was this. M. de Gamond's experiments were thrown aside. A common bore hole was put in at Sangatte, which was not the right place on the French side; and another at St. Margaret's Bay, which was undoubtedly not the right place on the English side. In 1874, I think it was, they sent for me to Paris to attend a meeting at the house of M. Léon Say, and we met M. Michel Chevalier, the very celebrated political economist, the Concessionnaire (with M. Lavalley and M. Raoul Duval), and the first President of the French Channel Tunnel Company. We came to certain resolutions of co-operation. There were some differences about it on this side afterwards, and the thing fell into abeyance. From the first day of our practical interest in the movement, we warned every one that St. Margaret's Bay was a mistake, and that the Hawkshaw plan of putting down pumps, with 2,000 horse-power to work them, quite out of

the question. When the French Channel Tunnel Company was formed, the first thing they did was not to adopt the experiments of M. de Gamond as gospel, not to adopt the experiments conducted by Mr. Hawkshaw and others at a cost of £1,000 each, paid, as I understood at the time, by the late Mr. Brassey, and the living Messrs. Wythes and Hawkshaw; but to throw past experiments, as merely valuable to prove, not what could, but what could not be done, overboard, and to set three of the most distinguished mining engineers and mineralogists of France on an entirely new system of experiments. These experiments were committed to the following distinguished men:—Mons. Lavalley, Délégué à la Direction des travaux (a gentleman whose name is well known in connection with the works of the Suez Canal), Mons. Larousse, ancien Ingénieur hydrographe de la marine nationale, et MM. Potier et de Lapparent, Ingénieurs au Corps national des mines. The result was to prove that our view was right, and the view of the other party entirely wrong; and that the place to come out at on this side was between Folkestone and Dover. It was proposed to us, as I said a moment ago, to join in this scheme, beginning at St. Margaret's Bay. Our objection was that if we tried the tunnel there, we should be pumping the Channel on one side, and on the land we should be pumping the freshwater from the whole country. Therefore we objected; and I will read you only a few lines from a report, dated May 1st, 1874, from our engineer, Mr. Brady, to myself. He says:—"As the whole object of the "undertaking is to ascertain the nature of the lower chalk in "respect to its freedom from water, it would be better to test it "at a point where it crops out above the sea level." That was our doctrine then; that is our doctrine now. That was the result of the new explorations of the French Tunnel Company as laid down in their Report of 1877, in these words:

"ETUDE DES FALAISES.—L'étude des falaises des deux rives "du détroit montre que dans la partie qui nous importe, et qui "comprend particulièrement la formation crétacée, les terrains "géologiques sont les mêmes. Des deux côtés ce sont les mêmes "couches avec les mêmes caractères et, ce qui est remarquable, "avec la même épaisseur. De là la présomption, autorisée "d'ailleurs par d'autres circonstances, qu'autrefois, avant les

" temps historiques, au lieu d'un bras de mer séparant deux " rivages, il existait une surface continue de terrain plus ou " moins ondulé, entre les points où se sont élevées depuis les " villes de Calais et Boulogne et ceux où l'on trouve aujourd'hui " Folkestone et Douvres. Le détroit, dans cette hypothèse, serait " dû à l'érosion successive d'un sol de peu de consistance, comme " est en général la formation crétacée, qui cédait peu à peu au " choc indéfiniment répété des vagues de la mer du Nord, si " violemment agitées pendant la mauvaise saison. De là pour " nous l'espérance que les couches qu'on rencontrerait au-dessous " de la mer, et dans lesquelles se déploierait le tunnel, seraient " sans grands déchirements et ne se présenteraient qu'avec des " inflexions auxquelles on pourrait se conformer le plus communé- " ment sans de grands embarras, dans le tracé souterrain du " chemin de fer.

" Cette espérance est corroborée par la particularité suivante : " des deux côtés du détroit, les couches de la formation de craie, " dérangées de l'assiette horizontale qu'elles avaient eue à " l'origine, ne l'ont pas été de manière à se relever fortement. " Leur inclinaison est toujours faible. Dans la majeure partie " du détroit, à partir de la France, elle est d'un septième, ce " qui semble indiquer que la force de soulèvement, qui a modifié " la situation des couches par rapport au plan horizontal, n'a " pas été violente."*

And following that view we have, as I believe, attained success. (Hear.)

Now, since we made this question "practical politics;" since we spent our money, bought the foreshore land, and constructed our works, other gentlemen have tried to revive a sort of rival project. I do not think much of it, because it is simply a project. They have not land, they have not works. It is so laid out that they will have to do what they would have done at St. Margaret's Bay—pump the sea on one side and the water of the country on the other. It begins at "Fan Hole" and ends at "Biggin-street," in Dover. It connects with no existing, and proposes no new railway, so as to make it part of the railway

* As an Appendix, on page 46, is printed a full extract from the report in question.

system of the country. I cannot believe, and will not believe, that Parliament will sanction an incomplete scheme. Shades of Smeaton and Brindley—the Continent of Europe beginning and ending at Biggin-street in Dover! (Laughter.) Whether the gentlemen of the Government will permit the Castle of Dover to be undermined, I do not know. That is one of those things that, as Dundreary said, at present no person can understand. (Hear, hear.)

Well, gentlemen, I told you that we said, in 1874, the tunnel was in the wrong place. But I have been told recently that these gentlemen never intended to go to St. Margaret's Bay at all, but merely indicated St. Margaret's Bay as a convenient point of departure. Now, there is nothing like appealing to the law and the testimony. I have got here a paper which was laid before Parliament, which any gentleman can see after the Meeting; and I find a red line amongst a set of papers, which bears the signature of Brunlees and Hawkshaw, distinctly making the tunnel end at St. Margaret's Bay. It was, if I recollect right, about two and a half to three miles from Dover. There it is, the intention being to go three miles away from Dover, in order to come three miles back again. I need not say that, as respects the interests of the South Eastern, it was practically excluding the South Eastern from connexion with the tunnel—not in words, not according to the plan, but in reality. The plan shows two red forks, one apparently joining a black line called the Chatham, and another apparently joining another black line called the South Eastern. The scheme started from the sea—three miles from our principal station in that town. Therefore I say that those gentlemen in old times went to St. Margaret's Bay, and no mistake, and they know it. But instead of confessing that they were absurdly wrong, geologically and in an engineering point of view, what they try to say is, I suppose, that they never intended to go there. But it seems to me they have stultified themselves by now proposing to go to a point about 1½ miles on this side of St. Margaret's Bay. Our engineer, Mr. Brady—who has studied these matters all his life, and examined the whole coast, by observations and soundings in every direction—advises me, only this morning, that by the way this new and

incomplete scheme is laid out, they must, if they are to carry it out at all, and if they succeed in pumping the sea and pumping the land, twist right round and get into the sea-track that we, in our own scheme, are attempting. I have therefore no great care as to what may take place; but I will only, in finishing that head of the subject, read to you a single extract from a work of a great geologist. I told you that when the French Tunnel Company began their operations in 1874, 1875, or 1876, they began and completed and have acted upon a perfectly new series of observations. They threw everything else overboard; and I have got before me, and will read you in a moment, one or two notes I had from M. Chevalier, the President of the French Tunnel Company of that day. But, what did these St. Margaret's Bay people, I ask them, do? Did they accept the researches of MM. Lavalley, Larousse et Potier et de Lapparent? No, instead of that they employed Mr. Topley, the geologist, to justify the folly now admitted by its abandonment of St. Margaret's Bay. The French said: "If you make the tunnel "it ought to start between Folkestone and Dover, on the west of "Dover." Well, this Mr. Topley, so employed, said: "No tunnel "in a straight line can be carried entirely through the chalk without flints; it must either, for a short distance, encounter the "chalk, with flints near its middle, or the gault near one end. The "former is the preferable plan. The recent researches" [that is, the researches of the French Tunnel Company, most carefully made by most eminent men] "give no sufficient reason "for recommending a change of direction for the Tunnel. "*The direction always advocated by Sir J. Hawkshaw and Mr.* "*Brunlees, from St. Margaret's Bay to near Sangatte, still* "*remains the best which can be proposed.*" (Laughter.)

Well, if that is so, why have they departed from it? That is a question I think should be answered. If St. Margaret's Bay was, according to their own geologist, the best point that could be selected, why have they come one and a-half miles on this side of it? (Hear, hear.) I do not know, gentlemen, that I have much more to say, but Mr. Shaw reminds me of two notes of M. Chevalier. One is dated the 27th March, 1877. He says:—

"In the course of a fortnight, or may be three weeks, the

" French Channel Tunnel Company will have completed the en-
" graving of a geological map of the bottom of the Channel, as
" well as the results of our soundings in the sea. To this map
" will be joined some explanatory notes to which we ascribe
" great interest. I will take care that a copy of the map and
" notes be forwarded to you as soon as completed. In reference
" to the South Eastern Railway, the information brought to
" light by the map and the notes is worthy of great considera-
" tion. I say no more for the present moment, I purpose being
" more explicit when I send off the papers."

And on the 29th May, 1877, he writes:—

" The map showing the strata of the Channel is to be deli-
" vered to us by the printers at the rate of 100 copies to-morrow
" and 100 more the following day. I have given orders that
" a copy be sent to you immediately, likewise to Mr. Forbes,
" with the memoir of the engineers. The line we prefer follow-
" ing under the Channel differs to some extent from that
" originally proposed by Sir John Hawkshaw; but lately"—
this is most important, gentlemen, and you will carefully note it in your minds—" lately Sir John having had a conference
" with M. Lavalley, he seems ready to accept our general line
" with unimportant changes. (Laughter.) In consequence of
" the adoption of our *tracé*, even with a few changes, a great
" benefit for Folkestone would accrue. It is true that some
" Englishmen say that your military engineers will require
" that the exit on the English side shall be under the guns of
" Dover."

Here I may just say that the exit of our scheme on our side, is also, " under the guns of Dover." M. Chevalier goes on:—" In
" such a case Folkestone might be deprived by force of that
" she was to obtain. But what may be exacted by the
" military engineers no one knows; and some plan might be
" contrived to give satisfaction to Folkestone, at all events."
Well, I wrote in reply to that to M. Chevalier:—

" I do not think you need be afraid of our military men and
" Dover Castle. The moment the men of science and the men
" of business agree where the tunnel ought to begin, and
" where it ought to end,—as a matter of scientific truth,—no
" military objections will be allowed to stand in the way."

Again I wrote to him after receipt of the last note I read to you:—

"I have always believed" (this is my opinion, which has not altered from that time) "that St. Margaret's Bay was a "mistake, and that we should follow the chalk from the point "where it crops out near Folkestone—what we call the 'old "'grey chalk,' but which I think your geologists call the 'Craie "'de Rouen.' It seems to me from a very hasty perusal of "your report, that something like this is meant by the Commis-"sion. I was, of course, aware of the fact that the stratum "dips to the north, and obviously, if that be so, St. Margaret's "Bay would be too far north for our purpose."

In fact, the grey chalk dips to the north, and it is clear that if you want to be in it you must take the west course. We have taken it and we are in it. The other gentlemen have taken the lower one, and are, of course, out of it.

In my very earliest discussions with M. Chevalier, I pointed out that the St. Margaret's Bay notion was as wrong in geology as in engineering, and I explained the view held both by myself and by our engineer, viz., that we ought to operate from the point at which the grey chalk cropped out, and ought to follow it.

At the risk of thoroughly wearying, pray let me read a report to me from Mr. Brady, made in reply to a statement that we had gained all our knowledge from M. Chevalier:

"South Eastern Railway,
"Engineer's Office,
"5, St. Thomas's Street,
"*London, Sept. 12th*, 1881,
"S.E.

"Dear Sir Edward,

"My first report to you on the subject of the Channel "Tunnel was dated May 1st, 1874. I beg to enclose a copy of "it as confirming your recollection.

"On the 3rd June, 1875, I met Lord Richard Grosvenor on "your appointment at the House of Commons, and pointed out "the engineering and geological objections to St. Margaret's "Bay as a starting-point on the coast for the Channel Tunnel.

" I then expressed a strong opinion that the trial shaft should " be sunk in the grey chalk at a point westward of Shakespeare " Cliff.

" I adhered to this opinion at the discussion which took place " between Lord Richard Grosvenor, M. Raoul Duval, and the " French engineer, at Lord Richard's house on the 4th June, " 1875; and again when meeting Sir John Hawkshaw on the " subject in February, 1876.

* * * * *

" I am, dear Sir Edward,

" Yours truly,

" (Signed) " FRANCIS BRADY.

" Sir Edward Watkin, Bart., M.P."

&c. &c.

Allow me, also, to read what I wrote at the time to Lord Richard Grosvenor. Mr. Low was a Flintshire man, and Lord Richard Grosvenor was the Member of Parliament for Flintshire. After a sentence, in which I spoke of sending him a resolution on the matter, I said (28th Nov. 1874):—

" We seem, however, to entirely differ upon the proper site " for experimental works, and upon the cost of doing them; " and, unless we are satisfied upon these two points, I could not " recommend our shareholders to subscribe any money."

In point of fact, I did not see any particular advantage or any particular fun (laughter), in spending £80,000 for that which I knew I could do for £20,000 or less, or that it was any advantage to the South Eastern to try an impossible feat of engineering by going to this out of the way and absurd site of St. Margaret's Bay. (Applause.)

I find, also, that on the 22nd January, 1876, I wrote as follows to the late Baron Lionel de Rothschild:—

" A difficulty has arisen in addition, owing to Lord Richard " Grosvenor determining that the question of the site of the " experimental works on the English side and the engineering " scheme shall be considered as settled."

Now, I said you, gentlemen, had made this question " practical politics." I said that until you interfered, and laid out your money, and made your works, nobody believed in the

tunnel. That is perfectly true, as I will prove. The prospectus of the Channel Tunnel Company was issued, I believe, in 1874 or 1875. It had among its directors men no less distinguished than Sir N. de Rothschild, M.P.; Mr. Alfred de Rothschild; Mr. Forbes, the Chairman of the Chatham and Dover Company; Mr. Hawes was deputy-chairman; Lord R. Grosvenor, was chairman; Sir John Hawkshaw and Mr. Brunlees were the engineers; Messrs. Wilson, Bristows and Carpmael were the solicitors; Messrs. Rothschild, of St. Swithin's Lane, were the bankers. If ever there was a society likely to influence people to subscribe their money it was that. And what was it they tempted the public with? They said: For each man who takes one share out of the £80,000 we will give two shares of £20. £60 of shares for £20 of money. That was tolerably good interest for money. But the fact was that out of the proposed issue of 4,000 shares of £20, or £80,000, they got out—how many do you think? Only 379. On 80 of those shares, £20 was paid; on 299 of them only £5 : 10*s.* was paid.

So all they got by this prospectus—(a copy of which shall be printed as an appendix)* with all these inducements, all these magnificent names, and with the Rothschilds for their bankers, was a final cash account of £3,119. Certainly, was it to be wondered at, when every engineer was to be seen trying to take away the reputation and experience of every other engineer; when nobody believed in the thing, and when out of all that desperate effort they saw the small amount of money obtained, was it to be wondered at that the question should slide out of men's minds, till you, gentlemen, began to brush aside error and incapacity and littlemindedness and to make this great measure march along? (Applause.)

Progress.

Under those circumstances—the high probability of progress, the settled experience, and in fact the actual proving of the case

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* See Appendix on page 44.

of the practicability of the tunnel—we have reason to hope, because we have progress to show. I was reading this morning —Mr. Fenton was good enough to show it to me—some remarks of the managers of the French Channel Tunnel Company, in which they speak with satisfaction of the works we have conducted, of the necessity of preserving with us the *entente cordiale*, and of the gratification it gives them to find that we open all our experiences to them, as they are ready to open all theirs to us. (Applause.)

I think, gentlemen, in the future, if we live—not a great many—years, we shall all feel proud that we connected ourselves with a great and noble enterprise, from no mean motives, with no selfish objects. For my part I have given my time, now, for a great many years, gratuitously, of course; I have invested my money; my friends and relatives have done the same. We intend to persevere. (Hear, hear.) We intend to do all we can to see this good work accomplished in open, honest daylight, for the cheapest possible amount of money, and at the earliest possible time. (Cheers.)

I have been asked to say what the work will cost. I had the other morning with me an American gentleman, who proposed to me a system of tunnelling which he said would much shorten our operations. At the close of our interview he said, "Has it "ever struck you what your way of making the tunnel will "cost?" I replied, "Sir, it has." He said, "May I ask how much?" I said, "Sir, the figure is here (the Chairman touched his forehead) and it is going to be kept there for the present." (Laughter.)

I am not going to tell even you, gentlemen, what I know with regard to the cost; but I hope that in a very few months you will know everything about it, because then there will be no danger in telling you our experience, and because it will then have been thoroughly and absolutely verified. (Applause.) You are connected, as I said, with a great work—I think the great work of the day. Some croaking people may say you will fail. Everything may fail; but I do think you will agree with me, that next to a great success is a great failure: because men of intellect and patriotism would rather fail in a great

effort than succeed in a small one. (Cheers.) Gentlemen, I have now to move :—

> "That the Agreement between the South Eastern Railway Company of the one part, and the Submarine Continental Railway Company Limited of the other part, in respect to matters connected with the construction, use, and working of a Channel Tunnel or Tunnels, now submitted to the meeting, be and the same is hereby approved, and that the Directors be authorized to take all such measures as are in their judgment desirable in reference thereto."

I will now give you the Heads of the Agreement, and will read any parts you like. This is an Agreement dated the 6th January, 1882, between the South Eastern Railway Company on the one side, and your Company on the other. It recites that for many years it has been deemed to be of great public and international importance to have the tunnel made. That in 1876 there were laid before Parliament reports and a memorandum signed by Commissioners appointed by Her Majesty's Government and by the Government of France, with reference to the tunnel. That the South Eastern have been for many years, and are still desirous, to do all in their power to further the construction and working of such a tunnel. That by the South Eastern Act of 1874 they were empowered to apply not exceeding £20,000 towards the cost of any soundings, and of any borings, shafts, driftways, or other works in connexion with the construction of such a tunnel. Also that by the South Eastern Act of 1881 they were "further empowered to pur- "chase and acquire by compulsion or otherwise, and hold for "the purposes of experimental borings, and other works for "the construction of such a tunnel, certain lands therein de- "scribed or referred to." These are, of course the elements, mainly, that will be transferred to you. Then the Agreement recites that the South Eastern have bought lands and constructed works in accordance with the powers given by Parliament; and have applied moneys in providing plant and machinery, and so on. Then it says—"Whereas, as the result of such researches, "experiments and operations it appears to be proved that such "a tunnel as aforesaid can best be constructed by starting from "a point between Folkestone and Dover;" and then it recites the powers of the Company which are in the Articles of Association, which any gentleman can get from the Secretary, or

buy for a shilling. Then it recites as to the allotment of the shares. Then it proposes that the South Eastern Company shall forthwith complete the experimental tunnel to a length of 1,000 yards from the bottom of the shaft at Shakespeare Cliff, and provide passing places at the end of each 500 yards. I hope, gentlemen, to invite you to dinner before long in one of these "passing "places" underground. (Hear, hear.) Then the Agreement recites that the South Eastern will on the 31st March, hand over the land, the shafts, and the benefit of all contracts. Then it goes on—"The " South Eastern Company further engages to carry all materials " required for the tunnel, and all workmen and servants of the " Tunnel Company," at a rate to be agreed, not exceeding half the usual price. Then the Tunnel Company are to pay on the 31st March, or in case of the non-execution by the South Eastern Company by that date of the works provided for by Article 1, then on such later date as is provided for by Article 2, "in consideration of such transfer as aforesaid, " £30,000 in cash, and £20,000 in fully paid-up shares to the " South Eastern Company. Then, after such transfer 'the Tunnel " 'Company' shall forthwith actively and *bonâ fide* continue the " prosecution of all such operations as shall be necessary," to determine more certainly the practicability of the tunnel. Then, if the practicability of constructing such a tunnel, be "reason- " ably proved to the satisfaction of the joint committee herein- " after provided for," the Tunnel Company shall proceed generally with regard to the tunnel. Then, if they fail to proceed within three years, practically the property would be valued back to the South Eastern. That is the clause I mentioned, some of our South Eastern shareholders thought too stringent. They thought it should be modified, and we will take care to attend to the suggestion. Then, in the event of the successful completion by the Tunnel Company of the tunnel, the South Eastern bind themselves to make land connexions so as to make a continuous line by the route of the South Eastern for traffic to and from the metropolis of England and beyond, with the Continent. Then it is provided that the South Eastern may at their own cost construct tunnels to the right or left—distinct works in fact. This provision is intended, mainly, to provide for a first-class connexion with the town of Dover—a matter

which we have entirely at heart, and intend to agree, if possible, with the Corporation of the good old town and the military authorities. "From and after the completion and "opening for traffic of a complete through connexion," the South Eastern are to give all due and reasonable facilities for traffic. On the other hand, the Channel Company are not to make any agreement obstructing the free passage of traffic. Then, for the purpose of carrying out these provisions, a Joint Committee is to be appointed of three persons from your Company and three from the South Eastern. Then, that at the first meeting of the Joint Committee after the 1st January in each year, a standing arbitrator shall be appointed, and the first standing arbitrator shall be the Rt. Hon. Sir George Bramwell, who retired recently from being a Lord Justice of Appeal. I may add that powers of agreement with the Chatham and other Companies are fully provided for. Then, "a more formal and extended agreement, containing all pro- "visions proper and necessary to carry out the provisions of "this agreement," is to be made if either party ask for it. All parties are to concur, at the joint cost, in such legislation as may be required. Then "this agreement shall not be bind- "ing on the parties hereto, or either of them, unless and until "it shall have been duly confirmed and approved by meetings "of the proprietors of each Company respectively, which "meetings shall be summoned forthwith."

That is the agreement with the seals of the two Companies. It was approved, as I stated, at the South Eastern meeting yesterday. I may say, further, having already spoken some few words about some slight antagonism, that knowing we are in the right groove I have no fear of that antagonism. We decline to be made use of to find a way of retreat for mistaken engineers. But still, our duty and our wish will be in every way we can to promote union of all interests, both in England and in France. We have no narrow spirit to gratify. (Applause.) I have no doubt we shall succeed in doing so. It is the interest of everyone, unless there be some few speculators on either side. And I shall certainly approach, through my friend Sir Philip Rose, Sir Nathaniel de Rothschild, who I know is most anxious for the completion of this work, to see if we can-

not come, through him, to a new understanding, preventing a great engineering mistake, and by preventing that mistake, at the same time enabling us to go to Parliament as a united body. (Applause.) At the same time, I must repeat that, having sunk our shafts, on our own land, exercising on our own property rights which Parliament allowed us to acquire, I do not see how we need fear that which is nothing but a project; which seeks, at one and the same time, to outrage the laws of nature, to make its Continental terminus at "Biggin Street," and cut the old town of Dover hopelessly in two. (Applause.)

Sir PHILIP ROSE, Bart., seconded the resolution.

Lord BRABOURNE: I also rise to support the resolution, because I am anxious to say a word or two on this subject. It is now several years ago, when this St. Margaret's Bay project was first mooted, that I had conversations with Sir E. Watkin on the subject. Having then turned my attention to this tunnel project, I was extremely struck with a remark he then made with regard to the only possible way of making the tunnel being to follow out the grey chalk. It appeared to me that there was an amount of practical good sense in what Sir E. Watkin then said, as there generally is in what he says, which would attract other people's attention as it attracted mine, to the feasibility and practicability of carrying out this great international work. I think everything that has occurred since then, including the experiments Sir Edward has referred to, has gone far to verify his words and show his sagacity. For my own part, I think you will all agree with me that the fears which are entertained by some persons, of increasing the facilities of communication between England and the Continent, are fears which rather belong to the people of the last century than to the more educated inhabitants of England at the present time. And if anybody has the confidence I have in the institutions, the freedom, the energy and the enterprise of England, they will believe, as the result of more ready and free access of England to the Continent, not that we shall get mischief from the adoption of Continental views in England, but that the Continent will receive benefit from the influence of our views, our enterprise and energy, on the people of the Continent. (Applause.) But the only thing I rose for is that I think it very desirable, and I hope the meeting will give some small expression of opinion to this effect, that we should all be united on one point, that of placing the

greatest possible reliance and confidence in our Chairman, Sir E. Watkin. For if this business is to be carried through I do not believe there is any man who can carry it through as successfully—as I believe it will be carried through—as Sir Edward Watkin can. His immense practical knowledge, his great experience, his great courage and perseverance, his determination to face difficulties and overcome them: his readiness and capability of expressing himself and of explaining affairs so as to convince any audience (hear, hear); all these make him the man most fit to carry out this enterprise, and on whom we may place the most implicit reliance. I hope, therefore, whether we succeed or not, and I will not believe in anything but the probability of success, I hope we shall give him, from the first to last, our very greatest regard and adherence. For my own part, having joined this Board at his request, I say frankly that if now or hereafter he finds that the substitution of any more influential name than mine on his Board would facilitate the enterprise and strengthen his hands, I shall be most willing to place my seat at his disposal, and retire in favour of anybody who may support him in a better or more efficient manner. (Applause.) Of course all of us desire that any investment we may make shall pay; but I believe for my own part and that of the other directors of this Channel Tunnel Company, that we have at heart first of all this great project, that we should carry out and complete a work which will not only make our names, if we are associated with it, something in history, but which will have a very growing and progressive importance both with regard to our own country and the Continental nations. To further that object I think no selfish consideration should stand in the way. (Applause.) I hope, therefore, that the greatest power will be vested in the hands of Sir E. Watkin to carry out this object; and in supporting this Resolution I can only assure him that I have the greatest confidence that he will act in a wise, cautious and courageous manner. I believe that under his management we shall carry this thing to a successful conclusion, and shall consider it a very happy day when he first turned his attention to the Channel Tunnel and determined to carry it to as successful a completion as all the other enterprises with which his name has been connected. (Cheers.)

The CHAIRMAN: Before I put the Resolution to the Meeting, I should like to say a word—in justice to a gentleman whose name, I believe, will go down to posterity with that of his colleagues,

Captain English, R.E. and Mr. Pigou, in the construction of the tunnel—I mean Colonel Beaumont. (Hear, hear.) I must say that the way in which they have thrown their souls into this matter is in every way excellent. I have no doubt they have remembered the motto of M. de Gamond, that it should be "*mente, corde, et manu*"—with mind and heart and hand—I am sure it would be pleasing to the Meeting to have half-a-dozen words from Colonel Beaumont, as we are favoured with his presence. (Applause.)

Colonel BEAUMONT: I can assure you that it is one of the proudest moments in my life to see the probable realization of what has always been a dream of mine. For a long, long time the probability of making a Channel Tunnel has been so fully spoken of that of course I need not say that I shall only offer to you a very few remarks, but before doing so I should like to acknowledge the cordial assistance and co-operation that I have always received from Sir Edward Watkin, and the Directors and officers of the South Eastern Company. No doubt that which Sir Edward Watkin has mentioned to you is the case—that until the Chairman and Board of the South Eastern took the question up, it was really in a condition of practical abeyance. The humble part I have played in the scheme is that with my colleague, Captain English (who has assisted me in carrying out my ideas), I designed the machinery which is now at work. The humble part we have played in the matter has been that I designed the machinery which enables the heading to be prosecuted with a sufficient amount of speed. As Sir Edward has said, if the old schemes which have now been resuscitated had been carried out with the means then at the disposal of the engineer, it would have been a matter of some 20 or 30 years before the headings could have been put through. But a proper appreciation of what machinery can do has totally altered the aspects of the case. (Hear, hear.) Captain English's and my own machine is now heading at the rate of 12 yards per day of seventeen hours. We have every confidence that the machine which will next be put into the heading will drive out at the rate of 1 yard of the heading per hour. If you have the same thing done on the French side, that will be 2 yards per hour, or, in round numbers, 50 yards per day. I have no hesitation in saying, as a matter of opinion only, as Sir Edward Watkin has said—it is a point you will be able to judge for yourselves as soon as you have been into the heading—that the advanced headings of this tunnel can be led at a rate of 50 yards per day (Sir E. Watkin: From both sides?—Col. Beau-

mont: Yes), working from both sides; that is to say, 25 yards each. The dirt that is cut by the machine is delivered in the waggons, so that this rate of advance is actually got by the manual efforts of two men only. One man is employed at the face of the machine, and another man behind driving it, and these two represent the only manual labour employed at the machine. The ventilation, which is of course a very important matter, and an absolute *sine qud non* in connection with the question of traffic through the tunnel, so far as the construction of the works is concerned, is provided for by the air which is necessary to work the boring machine itself. (Hear, hear.) There is no exhalation of carbonic acid from the chalk that I have ever been able to detect. I do not think that any exists, but, be that as it may, the amount of air which is required for working the machine is quite sufficient to keep the headings perfectly ventilated, so that the air down there is as good as in this room, I was going to say, but I venture to say, is better, because we have the gas lighted here. When you come to the question of working the tunnel, and that, not only for the tunnel completed, but in the construction—that is for getting the dirt away—that is a system of compressed air locomotive with which my name is associated, which will completely solve the difficulty. Arrangements have been made by which one engine will be shortly at work in the Tunnel, which will enable a proper judgment to be formed as to the effect it will have for extended operations. But this I can assure you, that compressed air is now in such a position that it becomes quite a measurable quantity. You can estimate the amount of coal you have to burn to move a given amount of dirt. Of course I do not intend to pursue this subject further, but I ask you to remember this figure—that by the use of the compressed air, and burning one pound of coals, you will move three tons a mile on a railway. If that statement, which I can boldly make, and shall shortly be in a position to prove, be true, it disposes at once of any question as to the difficulty either of ventilation or of the working of the Channel Tunnel. I need hardly say, in conclusion, that I am much obliged to you for the way in which you have listened to my remarks, and that I thank Sir Edward for the expressions of kindness in which he has referred to me and my colleague, and to Mr. Pigou, whom I have the pleasure of seeing there. (Cheers.)

Lord ALFRED CHURCHILL: My father was a proprietor of the old Thames Tunnel shares, and I inherited a few of the shares he left. I think we all ought to congratulate Sir Edward

Watkin and the Board of the South Eastern Company upon having assisted in the promotion of this very great scheme. I do most fully and thoroughly endorse the views expressed by Lord Brabourne as to the necessity of according to him the fullest confidence in the management of this undertaking. It is one of those grand conceptions which I always believed to be capable of accomplishment, and it is one of those which in its ultimate results will redound not only to the credit of those who undertook it, but to the promotion of the intercourse between nations which will do more than anything else to maintain the peace of the world, and aid the prosperity of peoples. (Cheers.) The scheme itself is one as to which I can really see no practical difficulty whatever. While not an engineer myself, I may be permitted to say that I see no appearance of difficulty that cannot be overcome. As soon as we get this admirable machine of Colonel Beaumont in operation, there is nothing whatever to prevent its proceeding to the end of its tether. I do not see the probability of any geological fault that is likely to interfere with it. It was only yesterday, after the Meeting which was held, that I spoke to a very leading geologist upon the matter. I asked him his opinion as to whether there was a probability of any fault, and he said "Well, if it is in the grey chalk, probably there is not. "It is not a stratification in any way given to faults." Then, with regard to the general engineering skill necessary, it is not so great as I take it, as that which the engineers of the day are required to exercise upon many other engineering feats. You may take, for instance, this projected bridge across the Forth, which is to have a span of 1,700 feet; in my opinion this will require infinitely greater engineering skill than will the construction of this tunnel. There are, no doubt, many sceptics who disbelieve in the project, because they are not of the character to readily appreciate novelties. They would rather take a bogey kind of view as to what may be the final result. I am not one of those people. I always place confidence in a thing of this sort. Then, with regard to the agreement which we have specially before us now. Yesterday, I consented as a South Eastern proprietor to the making of this agreement. To-day, I also consent to this Company entering into the scheme with the South Eastern. The arrangement appears to be one which is perfectly fair and reasonable. The South Eastern have invested £30,000 for preliminary expenses. That is to be repaid to them; but in addition to that a bonus of £20,000 in shares of £1 each is to be given to them, for which we

shall get their goodwill, and their facilities in the conveyance of materials for the construction of the tunnel at a very reduced price. These are points which I think we may very well and fairly agree to. They are so entirely reasonable that I will not further detain you except to express my thanks to Sir Edward Watkin for his admirable address, which I hope will be circulated amongst the proprietors. (Cheers.) I express this hope because its circulation will very much enlighten public opinion out of doors. (Cheers.)

Mr. THOMAS (representing Mr. Low, C.E.): What I claim for Mr. Low is that he was the first English engineer who projected a practicable scheme for crossing the Channel. This was eighteen years ago. Of course, we have now heard so much about it, and so much has been written and said, that people now-a-days think it very much easier than it was thought to be at that time. I recollect very well that many gentlemen of practical experience, who now think it very easy, at that time thought it impossible. At least, they said so. But what I wish to claim for Mr. Low more especially is that he is the original projector, *i.e.*, the original English projector of this Channel Tunnel Company. Lord R. Grosvenor was the chairman of it, and I have here a letter from him, written in 1868 to Mr. Low, which will prove my words. Lord R. Grosvenor writes to Mr. Low :—

"Dear Sir,—I have appointed to meet Mr. Brunlees on Monday "next, I hope. I will write further after having seen him. I can "assure you I have lost no confidence in your scheme. The money "question is a serious one. I shall be glad to do all in my power "to set it going, as I have great faith in it."

The fact that Lord R. Grosvenor was Chairman of the Company, and was drawn into it by Mr. Low, shows that he fully believed in the scheme of Mr. Low. Of course it is called now Mr. Hawkshaw's. Mr. Hawkshaw was brought into the scheme, after it was projected and authorized, by the influence of some member of the Committee. Mr. Low claims to be the first English projector of a scheme for practically crossing the Channel; and I may say that the French engineers approved Mr. Low's plans, and they are at the present moment, in their works, adopting the principle first proposed by Mr. Low—that is a system of double galleries, the ventilation of which circulates by down-cast shaft and up-cast shaft, in the same way as Mr. Low told us.

Mr. WITHERS: I must confess I am one of those who at one time imagined that the Channel Tunnel could only be the work of the

two great nations—England and France; and that unless it were undertaken internationally by those two Powers; it would scarcely be accomplished by any other means. But from the energy our Chairman has shown in conducting experiments on this matter, and the assistance he has obtained from Colonel Beaumont and others, it now turns out that this enterprise which I supposed could only be internationally worked, is one which may assume, and has assumed, the character of a commercial speculation. (Hear, hear.) That is to say, that men of business, for their own purposes in the investment of money, can fully go into this enterprise. If the results which now, by the energy of Sir Edward Watkin and the talent of the engineers, are in prospect—if those results are brought about, as Mr. Brady, our engineer, is certain they will be, commercially, an effort need not be made to get the governments to do it. But I believe more than that; that they have found out the mistake which England made formerly, in not supporting the Suez Canal. (Hear, hear.) They have learnt the lesson, and they find that this great enterprise is being carried out through the genius of Sir E. Watkin being brought to bear upon it. It will be one of the things that are not only a benefit to the world at large through the greatness of their conception, and which draw the uttermost parts of the earth together by easy transit, but that they can be made to pay. The notes of the interview with Lord Palmerston shows him prejudiced against the Tunnel Scheme, as he was prejudiced against the Suez Canal. England lost the opportunity she had then of having the largest property in that great undertaking, and securing the way to India for herself. What has she done since? By the great genius, now, unfortunately, lost to us, of the late Lord Beaconsfield, she acquired a portion of the Canal shares. He was taunted with having undertaken a stock-jobbing project; but it turned out that, through the capital he borrowed from the Rothschilds, England can now make two or three millions of profit by the transaction besides the great political advantage she has acquired. I think, with that great experience before us, when we find that the commercial result of this enterprise is made certain by our exertions, we shall find that the two nations will come forward and give us a large premium for our enterprise. It will be then for us to consider whether we shall give up our interest and let these two nations carry it to a successful issue. It may be proved that my original idea will be carried out. (Hear, hear.) I shall be glad if it is so—that two nations should join in this great undertaking. Sir Edward Watkin has kept a profound secret what will be

the probable outlay. But by spending a few millions of money they will have accomplished this great undertaking. And what have they done together before? They spent nearly one hundred millions in fighting Russia (hear, hear), and they might as well have thrown it to the bottom of the sea. Put this money at the bottom of the Channel, and look at the advantage that will follow. It is an advantage that can never be torn up as a piece of waste paper. With regard to the military objections to the tunnel, I am satisfied that if a hostile army were to enter it, we could drown it, and their fate would be like that of Pharaoh and his host in the Red Sea. (Laughter.) But, that having been done, though the dead cannot be restored to life again, the tunnel could be restored, the water pumped out, and it could again be used for peaceful purposes.

I agree with Sir Edward Watkin that the more you connect nations together the less likely they are to quarrel. I believe with Cobden and Chevalier, that these old antagonisms are to be, like the tunnel itself, "in the deep bosom of the ocean buried." (Applause.) I am glad that Sir Edward Watkin has taken so important a part in this enterprise, and applied to it what is more even than Colonel Beaumont's air pressure,—I mean the steam power which he personally possesses at the head of this concern. (Cheers.) I am quite sure that no other man has the same amount of steam power to carry it out, and he is the only man to whom I can give my confidence in doing so. (Applause.)

Alderman HADLEY: As a business man, a commercial man, and one who has visited this tunnel, I cannot leave this room without saying one or two words on the subject. I fully agree with everything the Chairman has stated. I also quite agree with much of what has been said by other speakers. I have been associated with mining enterprises in this and other countries; and although I am a business man in the City, I have been in mines underground, and in various workings, and I am fully alive to the value of the principle of working this tunnel scheme. There is no doubt in my mind of its perfect practicability; and there is no doubt in my mind of its perfect accomplishment by the machine for boring. I would suggest for its more rapid development, that instead of seventeen hours, twenty-four hours a-day should be worked, and instead of two shifts there should be three of eight hours each. (Hear, hear.) There is no doubt, either, about the ventilation. You may find, as you get further on, that the air is not so pure. But it is a simple thing to throw in air, and to put in an exhaust.

There is no doubt that the air in the tunnel may somewhat affect the lungs, but the men can work there as well as they could in this room. I feel that I need not now say more, Sir Edward, because I am sure we are fully agreed that this work can be prosecuted with the utmost safety, and that we shall ultimately ensure success. (Applause.)

The CHAIRMAN: Does any other gentleman wish to address the meeting? if so, we shall be delighted to hear him; if not, I have only one or two words more to say. I am afraid that Mr. Thomas struck a sort of "vein," as coal people would say, which convinces me that probably I made an omission in not reading to you some letters, one dated the 18th March, 1868, and the other the 21st March, 1868, which justified the remark in paragraph No. 2, in the letter sent out by the South Eastern, for the allotment or offer of the shares. I won't trouble you with reading them, but with your permission I shall have these letters printed on the minutes of this meeting.* Now, one of the things which has been talked about with regard to the Channel Tunnel—I must say I never knew, in all my thirty-seven or thirty-eight years' experience, such non-practical things expressed as have been expressed through the medium of the great engineers in Great George Street. We used to say, you know, a good deal about the gauges. I remember an old Oxfordshire parson whom I knew, when there was a great discussion about gauges, exclaimed—"With all this "talk about 'narrow gauge' and 'broad gauge,' they must think "we are *green*-gages." (Laughter.) I think we must all have been set down as "green" gages on this Tunnel question, by the united science and genius of Great George Street. If I want to talk about a tunnel, I go to the mining engineers. Now, one important point is—time, cheapness. Some of these gentlemen, in their long foolscap reports, have proposed lining the chalk of the tunnel with brick-work. They talk of bringing the bricks in at one end and taking the dirt out at the other. Now the material we get from the boring is about the best that can be obtained for making cement. A tunnel that can stand by itself no one would dream of lining with brick. It only wants that which will protect it from perishing. You can line it with the material you take out of it, converted into cement, and used as concrete. It is not worth our while to put down the machinery for a small job; but following the example

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* For Letters, see p. 41.

of the coal mines I know much about, we can bring the stuff out of the Tunnel to the surface and use it to some large extent. These are things which do not seem ever to have dawned upon those who occasionally criticize what we have to say. But I have one thing particularly to mention to you. I have my own crotchets, and I have always thought that while it was the duty of the railway companies on both sides of the Channel to make the land approaches to the tunnel, it was the duty of the Governments to make the actual tunnel under the sea.

Before I went most energetically into this matter I pressed it most strongly on the President of the Board of Trade. The words I used were these:—"We ought to take care that national interests "should not be sacrificed to private monopoly. I would recom- "mend what is the key of the whole work, viz. that the under sea "portion of ten English miles should be made the Queen's high- "way, the property of the nation." Well, I got a letter from the President of the Board of Trade to say that the Government thought that this great matter should be left to what they call private enterprise. I said, well, I did not understand "private enterprise," when I knew that when he and I went to Parliament we drove down the Thames Embankment, to the scene of the performance of our duties, over a great public work, made by a Government guarantee. But I said that I was not satisfied even with an answer from the President of the Board of Trade, and that I wanted the decision of the Cabinet. I have received that decision. I may say, therefore, that my conscience is purged. I have made my suggestion. It has been refused, and this great work is now relegated to the operation of private enterprise. (Hear, hear.)

I could not put the resolution without saying something with regard to our engineer, Mr. Brady. I do say that Mr. Brady's knowledge of the coast of England, and of practical geology would, in fact ought to, have prevented the mistakes which have been made by some distinguished men. I think Mr. Brady's views were perfectly correct. I entirely endorse them. I take no credit for them; they were his, not mine; and I do think he deserves considerable credit from a meeting mainly composed of South Eastern shareholders, for all he has done in connexion with this question. (Applause.)

The Resolution was then put and passed unanimously.

The CHAIRMAN: I think that is all, except that I ought to mention to you the names of our scientific and legal com-

mittee. We thought that as so many considerations of law and science attend this matter, we had better strengthen our position by inviting the help of eminent men. The legal committee consists of Sir George Bramwell, late Lord Justice, Sir Edmund Beckett, Bart., and Mr. J. F. Moulton, F.R.S. Then there are Professors Siemens, Preece and Hughes, representing electrical science; Sir Joseph Whitworth, hydraulics and mechanics; Sir Frederick Bramwell and Mr. Low, engineers; and we hope to obtain the services also of Sir James Falshaw, as a practical engineer. There are Mr. Spottiswoode, the eminent President of the Royal Society, and Professor Boyd Dawkins, representing geology; Mr. Charles Tylden Wright, representing mining, which is so important a question connected with our works; General Sir Frederick Chapman, G.C.B., General Brownrigg, C.B., and Colonel Surtees, for military matters; Colonel Beaumont and Captain English representing tunnel engineering. Now, gentlemen, I do not think I have anything more to trouble you with to-day. That concludes our business. (Applause.)

Mr. SPURLING proposed a cordial vote of thanks to the Chairman and the Directors for the most interesting Meeting they had held that day. (Cheers.)

Mr. JARVIS seconded the motion, which was passed with applause.

The CHAIRMAN: We are much indebted to Mr. Spurling, to Mr. Jarvis and to you all for so kindly forgiving me for the long and dry explanation I addressed to you, and I may state that, whether it is worthy or not of reading, it will be printed and circulated among the Shareholders at large. I am strongly of opinion myself, that Directors of joint stock business ought to live in public, and that what one Shareholder chooses to hear by being present, others who are not present should be enabled to read. (Applause.)

LETTERS referred to on page 38.

JOHN HAWKSHAW TO JAMES BRUNLEES.

33, Gt. George Street,
Westminster, 18*th March*, 1868.

Dear Brunlees,

I have been engaged for upwards of two years in boring, and in other investigations connected with the practicability of a tunnel under the Channel. These are still proceeding, and so far as my borings on the French coast are concerned, with the knowledge, assistance, and approbation of the French Government. Some thousands of pounds have already been expended by Mr. Brassey, Mr. Wythes, and by myself in these preliminary matters.

As frequent public allusions have from time to time been made in different ways to the subject, I thought that you, as well as all other engineers, were well aware of the circumstance that I was pursuing my investigation.

Consequently I learned with much surprise, only a day or two ago, that you had associated yourself with two other engineers to seek for a concession for this work.

It is true that a notice did appear in a Journal, some short time ago, stating that I had abandoned the idea, or something to that effect: but from the well-known nature of such statements I can scarcely think you could therefrom have seriously concluded that I had given up the prosecution of the subject. Indeed, one of your colleagues, *a* Mr. Low, seems to have been aware of what I was doing, as he pretends partly to describe my plan, and your other colleague, M. Thomé de Gamond, has, during the last 12 or 18 months, made more than one attempt to induce me to associate myself with him, and indeed to join him in putting the measure before the visitors to the Paris Exhibition of last year; but I declined on the ground that my investigations were not fully completed.

After this explanation you will, I think, scarcely consider it right to proceed with the subject in the way you are doing.

I have heard that Lord Richard Grosvenor is associated with you. I feel sure that his lordship is unacquainted with the nature, extent and cost of the investigations that I have pursued, otherwise he would not have given his sanction to the project you have taken up, and I propose sending a copy of this letter to him. I feel I shall be acting rightly towards him by doing so, that he may be acquainted with the true state of the case.

Yours truly,
JOHN HAWKSHAW.

James Brunlees, Esq.
5, Victoria Street, Westminster.

JAMES BRUNLEES TO JOHN HAWKSHAW.

Westminster, 21*st March*, 1868.

My Dear Sir,

I have to-day laid your letter of the 18th inst. before Lord Richard Grosvenor and the other gentlemen with whom I am associated in the Channel Railway Scheme.

About three months ago, several of these Gentlemen waited upon me and asked me to give my professional aid, in carrying out the project.

It was represented to me, that M. de Gamond had been investigating this matter for upwards of 30 years, and that Mr. Low had for several years been pursuing the same course, and that some twelve months ago he had a favourable interview with the Emperor on his plans.

I then went carefully into the project, and on finding the scheme perfectly practicable, I assented to give my professional aid.

I consider that a project of this kind is open to the world, and I do not see how you can consider me guilty of a breach of professional etiquette in following out the wishes of the gentlemen who engaged me to act with them in this important international undertaking.

I am, my dear Sir,

Yours very truly,

JAMES BRUNLEES.

John Hawkshaw, Esq., F.R.S., &c., &c.

WILLIAM LOW TO JOHN HAWKSHAW.

Rosenheath, Grove Park,
Wrexham, 20*th May*, 1873.

My Dear Sir,

When I last had the pleasure of seeing you I asked you in reference to my position as one of the Engineers of the Channel Tunnel Company, what I was to say to the Chairman, Lord Richard Grosvenor; to which you replied that I might tell him, "we were as good friends as ever." I inferred from this that you withdrew your objection to act with me, consequent on a difference of opinion as to some details of the proposed tunnel. I am surprised to find this inference is mistaken. * * * * * *

As I wish to urge the Committee to rescind the resolution which they came to, accepting a resignation from me which I never intended to offer, I write this to you in the hope that you will, before the next meeting of the Committee, enable me to say on your authority that the misunderstanding between us is removed, as I thought it was, from your language at our last interview.

I am, my dear Sir,

Yours very truly,

WILLIAM LOW

John Hawkshaw, Esq.,
33, *Gt. George Street, Westminster.*

JOHN HAWKSHAW TO WILLIAM LOW.

33, Gt. George Street,
Westminster, 27th May, 1873.

My Dear Sir,

I am sorry you should have misunderstood what passed at the interview referred to in your note. I stated at the outset that I thought I had a right to determine for myself with whom I would be associated, and I thought you were made clearly aware of my decision. At the close of our interview you said you hoped it would not prevent our remaining friends, to which I said, "Certainly not;" but I must state that the decision then arrived at is irrevocable so far as I am concerned.

With regard to the Committee, they have a right to make their own appointments, and they quite understand that they can re-appoint you if they think fit; but in that event I should retire.

Yours truly,
JOHN HAWKSHAW.

William Low, Esq.,
Roseneath, Grove Park, Wrexham.

WILLIAM LOW TO THE CHAIRMAN AND COMMITTEE OF THE CHANNEL TUNNEL COMPANY.

Roseneath, Grove Park,
Wrexham, June 2nd, 1873.

My Lord and Gentlemen,

* * * * * * * *

My propositions were considered by the French Commission along with Mr. Hawkshaw's sketch plans, which we all signed, and while the line was approved generally as being for the most part in an impervious bed of chalk, the plan of a double driftway and tunnel was distinctly pronounced by the Commission to be the only practical way of making the tunnel, and of working it satisfactorily after it should be made.†

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I am, my Lord and Gentlemen,
Your most obedient Servant,
WILLIAM LOW.

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† See "Extrait des Registres des Délibérations du Conseil" of the "Conseil Général des Mines."

APPENDIX referred to on page 25.

CHANNEL TUNNEL COMPANY (LIMITED).

Incorporated under the Joint Stock Companies Act, 1862-1867.

Empowered by Act of Parliament 38 & 39 *Victoria*, 1875.

CAPITAL FOR PRELIMINARY WORKS £80,000, IN 4,000 SHARES OF £20 EACH.

EXECUTIVE COMMITTEE.

Lord Richard Grosvenor, M.P., *Chairman.*
William Hawes, Esq., *Deputy-Chairman.*
Sir Nathaniel de Rothschild, Bart., M.P.
Alfred de Rothschild, Esq.
J. S. Forbes, Esq., Chairman of the London, Chatham, and Dover Railway Company.
And one other Member of the London, Chatham, and Dover Railway Company.

ENGINEERS.

Sir John Hawkshaw, C.E., F.R.S. James Brunlees, Esq., C.E.

BANKERS.

Messrs. N. M. Rothschild & Sons, St. Swithin's Lane, E.C.

SOLICITORS.

Messrs. Wilson, Bristows & Carpmael, Copthall Buildings, E.C.

SECRETARY.

William Bellingham, Esq., 9, Victoria Chambers, Westminster, S.W.

THE object of the Company is to sink a shaft at St. Margaret's Bay, near Dover, and to drive a short driftway therefrom under the sea, in the direction of works near Calais to be executed cotemporaneously by the French Tunnel Company, to determine more exactly than can be done

by the trial borings already made, the time and expenditure required to complete a Railway Tunnel between England and France. These preliminary works will form part of the Tunnel and may be finished within eighteen months.

The French Tunnel Company is empowered by Act of Assembly to unite with an English Company for the execution of the Tunnel. The first Capital of the French Company is also £80,000, and has been subscribed by the Company of the Chemin de fer du Nord, the Messrs. Rothschild frères, of Paris, and a small body of Capitalists.

Of the £80,000 now required by the English Channel Tunnel Company, Messrs. N. M. Rothschild and Sons, and the London, Chatham, and Dover Railway Company, have each consented to subscribe £20,000, conditionally on the balance of £40,000 being provided, of which sum above £15,000 is already subscribed.

It is difficult to make an adequate estimate of the amount of the passenger and goods traffic to and from England and the Continent when railway communication shall be established. The passenger traffic is fully 450,000 persons per annum, increasing yearly at the rate of about 5 per cent.; and when the special inconveniences attending the present painful and expensive route are removed and replaced by the comforts of modern railway travelling, with a frequent, regular and uninterrupted service, the number of travellers will, it is universally admitted, increase at least threefold. The goods traffic amounting in value to about £75,910,000 per annum, and employing a tonnage of about 12,000,000 tons, must to a great extent be carried by the quickest and most direct route, especially when it can be so conveyed with certainty and punctuality, and without change of carriage, to and from all parts of England and the Continent.

The subscribers to this Capital of £80,000 will be entitled, in respect of each share now taken, to two additional shares, treated as fully paid up in the Capital to be raised for the completion of the Tunnel. They will also have the right to subscribe for a proportionate part of that Capital when issued.

The Articles of Association, the Company's Act of Parliament for acquiring Land, and the Act of the French Assembly, may be seen at the office of the Solicitors, Messrs. Wilson, Bristows & Carpmael, Copthall Buildings, E.C.; and any information required by intending subscribers may be had on application to the Secretary, at the Office, 9, Victoria Chambers, Victoria Street, Westminster, S.W.

Applications for shares on the Form attached should be sent with a Deposit of £5 per share as soon as possible, as the Parliamentary powers for the purchase of land will shortly expire, to the Bankers, Messrs. N. M. Rothschild & Sons, New Court, St. Swithin's Lane, London, E.C.

APPENDIX referred to on page 19.

Les travaux d'exploration de 1876, plus étendus que ceux de 1875, ont consisté :

1° Dans l'étude des falaises qui bordent la mer en France et en Angleterre, et sur lesquelles chacune des couches qui les constituent est facile à distinguer. A cette étude des falaises se rattachait nécessairement l'examen géologique d'une zone plus ou moins large du littoral même ;

2° Dans l'étude du fond même du détroit, de manière à en faire une carte géologique presque aussi exacte que si la mer se fût retirée et que le détroit fût à sec. Cette étude s'est faite par le moyen de sondages en mer très-multipliés ; dont chacun est marqué sur la grande carte annexée aux rapports que vous avez déjà entre les mains. On s'est proposé d'opérer les sondages de telle sorte que chacun, s'il se pouvait, rapportât un échantillon de la roche même formant le fond de la mer. Ces sondages faisaient aussi connaître la profondeur de la mer en chaque point. Toutes ces profondeurs, variables avec la marée, ont été modifiées par le calcul, de manière à être comptées à partir d'un plan de niveau uniforme ;

3° Enfin, nous avons exécuté sur le littoral, à Sangatte, un forage qui a été creusé à la profondeur de 130 mètres, c'est-à-dire à 20 mètres environ au-dessous de la couche d'argile bien connue, qui joue un rôle important dans la géologie de la région. C'est sur elle que repose l'ensemble des couches composant ce que les géologues appellent formation de craie, qui nous intéresse tout particulièrement. Etant imperméable, cette couche d'argile garantit les assises inférieures de la formation crétacée de l'invasion par mouvement ascendant, des eaux qui se trouvent dans les terrains inférieurs. Elle est désignée dans les rapports sous le nom anglais de *Gault*.

Des trois opérations que nous venons d'énumerer, et qui toutes ont été menées à bonne fin, la seconde, celle de l'étude du détroit dans le but non seulement d'en faire l'hydrographie, mais aussi de dresser la carte géologique du fond de la mer, était la plus délicate et la plus complexe.

Nous n'hésitons à vous dire, Messieurs, que cette partie du travail de 1876 a été accomplie d'une manière supérieure. Nous ne croyons pas que jamais une œuvre d'hydrographie et de géologie combinées ait été executée par des procédés qui donnassent autant de garantie. Ce sont des mérites que les auteurs des rapports, qui étaient eux-mêmes les auteurs des études, n'ont aucunement chérché à mettre en relief, mais que nous regardons comme un devoir de vous signaler.

L'ensemble de ces explorations diverses a été organisé et dirigé par l'Ad-

ministrateur délégué, M. A. Lavalley, qui y a trouvé l'occasion de montrer à quel point il est familier avec les problèmes grands ou petits qui peuvent se présenter dans les travaux publics. C'est à lui qu'on doit spécialement la forme définitive des outils destinés aux sondages en mer, qui se sont montrés si efficaces. C'est également à lui que nous sommes redevables des arrangements ingénieux par le moyen desquels il a été possible de faire, dans la saison de 1876, avec une exactitude parfaite et une grande rapidité, le nombre extraordinaire de sondages en mer qui était jugé indispensable pour nous faire suffisamment connaître la géologie et l'hydrographie du détroit. Les collaborateurs de M. Lavalley en 1876 ont été M. Larousse, ancien ingénieur hydrographe de la Marine nationale, et MM. Potier et de Lapparent, ingénieurs au Corps national des mines. Tous les trois, par leur zèle, leur sagacité et leur dévoûment à une tâche difficile dont ils sentaient l'importance patriotique, se sont acquis des titres à la considération du monde savant et à votre propre reconnaissance.

Nous allons vous faire connaître, avec quelque détail, les résultats principaux des trois catégories d'explorations ci-dessus mentionnées. A cet effet, il suffit de résumer les rapports qui vous ont été adressés. Ces rapports, au surplus, sont éminemment dignes de votre attention, et si vous lisez *in extenso* vous n'aurez qu'à vous en applaudir.

ETUDE DES FALAISES.—L'étude des falaises des deux rives du détroit montre que dans la partie qui nous importe, et qui comprend particulièrement la formation crétacée, les terrains géologiques sont les mêmes. Des deux côtés ce sont les mêmes couches avec les mêmes caractères et, ce qui est remarquable, avec la même épaisseur. De là la présomption, autorisée d'ailleurs par d'autres circonstances, qu'autrefois, avant les temps historiques, au lieu d'un bras de mer séparant deux rivages, il existait une surface continue de terrain plus ou moins ondulé, entre les points où se sont élevées depuis les villes de Calais et Boulogne et ceux où l'on trouve aujourd'hui Folkestone et Douvres. Le détroit, dans cette hypothèse, serait dû à l'érosion successive d'un sol de peu de consistance, comme est en général la formation crétacée, qui cédait peu à peu au choc indéfiniment répété des vagues de la mer du Nord, si violemment agitées pendant la mauvaise saison. De là pour nous l'espérance que les couches qu'on rencontrerait au-dessous de la mer, et dans lesquelles se déploierait le tunnel, seraient sans grand déchirements et ne se présenteraient qu'avec des inflexions auxquelles on pourrait se conformer le plus communément sans de grands embarras, dans le tracé souterrain du chemin de fer.

" Cette espérance est corroborée par la particularité suivante : des deux côtés du détroit, les couches de la formation de craie, dérangées de l'assiette horizontale qu'elles avaient eue à l'origine, ne l'ont pas été de manière à se relever fortement. Leur inclinaison est toujours faible. Dans la majeure partie du détroit, à partir de la France, elle est d'un septième, ce qui semble indiquer que la force de soulèvement, qui a modifié la situation des couches par rapport au plan horizontal, n'a pas été violente."

LONDON:
PRINTED BY C. F. ROWORTH, BREAM'S BUILDINGS,
CHANCERY LANE.

THE CHANNEL TUNNEL.

REPORT OF THE PROCEEDINGS

AT AN

EXTRAORDINARY

GENERAL MEETING

OF THE MEMBERS OF THE

Submarine Continental Railway Company

LIMITED,

HELD AT THE CANNON STREET HOTEL, LONDON,

On THURSDAY, AUGUST 17th, 1882.

SIR EDWARD WILLIAM WATKIN, Bart., M.P., in the Chair.

London:
PRINTED FOR THE SUBMARINE CONTINENTAL RAILWAY COMPANY
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1882.

THE

Submarine Continental Railway Company

LIMITED.

Report of the Proceedings at an Extraordinary General Meeting of the Members, held at the Cannon Street Hotel, London, on Thursday, August 17th, 1882, Sir Edward William Watkin, *Bart., M.P., in the Chair.*

THE CHAIRMAN: I must apologise for being a few minutes late, gentlemen; but I will at once ask the Secretary to read the notice convening the Meeting.

Mr. JOHN SHAW having read the notice,

The CHAIRMAN said: Gentlemen, I have to propose the usual resolution, which is, "That the Report and the Statement of "Accounts to June 30th and the supplementary account to 15th "July, 1882, now submitted, be received and adopted." Now that we have arrived at a distinct period in the operations of the undertaking, the Directors thought it was better to anticipate the annual meeting, which by the Articles of Association has to be held, and to meet you on the completion of an important section of our labours. The Report, which is tolerably full, tells you that, being under obligation to use all our efforts to complete a length of 2,000 yards of experimental tunnel, you have completed that length with some small margin of excess.

Thus those obligations and understandings which existed between you and the South Eastern Railway Company are practically fairly fulfilled on both sides. Your enterprise may be looked on in two or three separate lights. One, in the light of its being a valuable section of practical scientific discovery and experiment; another, as bearing—as it does—upon the great question to be solved of the practicability of making a Tunnel under the Channel; and thirdly, on its contribution of so much work in the permanent construction of such a Tunnel. As regards the scientific aspect of the question, I do not suppose that there are any men who can jingle two ideas in their brains who would deny that what you have done has been a most valuable service to science; and when you are permitted to proceed with your labours, I hope, in addition to dealing with the question of making a Tunnel, you will deal with another question, which it seems to me is excessively important to England in general and to the South Eastern and the southern railways, in particular. I do not know whether any of you are practical geologists, but whether you are so or not, no doubt you have observed between Boulogne and Calais a large number of chimneys and large hoisting and winding apparatus and now and then a great deal of smoke. The site where you may have observed that, is the site of the "Marquise" collieries and iron mines, where coal is raised and iron is manufactured. That particular point is, I believe I am right in saying, something over twenty miles in a straight line from the point which, when you recommence operations, you will in a very few months reach. Gentlemen connected with the Geological Society have suggested that we should go a little beyond our original purpose, and take borings at that point, enabling us definitely to say whether those coal measures which you find between Calais and Boulogne do not extend across under the English Channel. I think that is an exploration costing you, in the position in which you are placed, a very small amount of money comparatively—an exploration which no one can make but yourselves, and that that exploration would be the performance, if executed, of a very great service to the country at large. Well now, with

regard to the second point (the bearing of the experimental works on the feasibility of a permanent Tunnel), I think we may say that the question is solved. I should myself have preferred that we might have been permitted to extend our works still further, because I always like not only to prove a thing fairly, but to prove it, if possible, in excess of proof. But I think as respects the position of the gray chalk, its non-water bearing character, its homogeneous nature, and the facility with which it can be excavated by machinery, we have absolutely and entirely proved those questions, at least. The third point—namely, how far the work you have done as an experiment may piece in hereafter with the permanent Tunnel admits of a very ready answer. Your Tunnel experimental works have been laid out by Mr. Brady, with our full concurrence, exactly on the line we think ought to be followed in the permanent Tunnel; and, therefore, all we shall have to do in the future with these experimental works of over 2,000 yards extending under the sea would be to widen them out with another machine, and line them with the material we got out in the process of excavation. Therefore, you see, the money is not wasted, because experiments very often, although very valuable *per se*, are frequently money without return. Your money is actually invested in something that may be part of a permanent work in the future, and, therefore, will assist rather than retard any future operations you may see fit to conduct. I think I may say, on thus reaching what we may call the second stage of our enterprise—reaching it happily and successfully—we may congratulate you on the fact that everything that was forshadowed to you in regard to the nature of the enterprise has been amply and entirely proved.

Well, now, the account shows you that you have laid out to the 15th July a sum of £42,700, and the Report tells you what you have got for that. It tells you that the length of experimental Tunnel, which, as I have told you, it is hoped will form part of the future permanent Tunnel, is 2,015 yards; and it tells you further, in the previous paragraph, that you have got 880 yards of submarine gallery

from Abbotts Cliff and various shafts at Nos. 1, 2 and 3 points. In addition, you have got a collection of very valuable and useful machinery. You have also got a large quantity of permanent way material under and above ground, and in point of fact the sum I have mentioned represents what I think you will agree with me is in the nature of a *bonâ fide* and economical investment for the proof of your great case; and when you remember that it was proposed by those of old time—times move so fast that ten years seem a long period—that £80,000 should be laid out, not to do what you have done, but in driving a hole for 800 yards with a permanent shaft, I think you will see that we have not been bad stewards by giving you four or five times as much experimental and permanent work for about half that money.

Now, gentlemen, yours is a very special position. First you are the custodians of the only existing legislation, because all that runs in the Statute Book is a power given to the South Eastern Company in 1874 to make experimental works, and the power given in 1881 to buy, by compulsion if necessary, the foreshore all the way nearly from Folkestone to Dover. There is no other legislation. There was a Bill in 1875 for buying a patch of land at St. Margaret's Bay, but the powers have long since expired. You are the only people who possess any Parliamentary authorities as to the works of a Tunnel, and the only people who have done anything to carry it forward. I think, therefore, the claim we made months ago, to have made this question one of "practical politics," is amply and entirely borne out by your having demonstrated it to a further practical extent. We have got at last the question into something like a position. Her Majesty's Government having locked this great enterprise up in a box during the whole of a stormy Session, have, at the very end of the Session, told you that they intend next year to submit the whole matter to the decision of a Joint Committee of the Houses of Lords and Commons in Parliament assembled. But their own present opinion—Tunnel or no Tunnel—is locked up still at the Board of Trade. Though promised to Parliament more than once, it has been carefully secreted.

I am very happy to find that there is to be a tribunal to be permitted at last to solve what I believe to be the greatest question of the time; and for my part, I have no fear whatever, that any small-minded views or international prejudices will in any way bias the minds of such a Committee, impartially chosen, of eminent men from each House, as no doubt the Government will feel themselves bound, in deference to the great interests at stake, to take care shall be appointed. I do not want in any way to complain that we have been kept as it were on the tenter hooks so long. We have not been idle—in fact, the reproach used against us is that we have been too industrious. (Laughter.) I never understood, before, that any civilized government, among any free people, ever discouraged that which everyone must admit would be a valuable practical experiment. Who have we damaged? We have damaged no one. What is the law of the question? —if we choose to go on the law, which we do not. What we wish to do is to work most cordially with Her Majesty's Government so long as the people choose to keep them in power, and to obey the wishes and instructions of Parliament; and whatever rights we possess, whatever feeling or wish we may entertain, we are ready to submit to the decision of a Joint Committee or two separate Committees of the House of Commons, elected by the people, and the House of Lords, who have largely sprung from the House of Commons.

The late Emperor of the French was a man of great sagacity. When this question of connecting France and England by a Tunnel was first made a matter of serious discussion, what course did he adopt? He remitted the consideration of it to all the industrial organisations of France. He received replies from all of them, or almost all of them, and I think nine out of every ten were in favour of the construction of a communication between France and England. And what is it after all? Why it is simply restoring the physical union which the Almighty bequeathed to mankind in the morning of the world. In the works we are projecting, and being projected, from the French coast, we are simply following the middle of that narrow

ledge of wonderful material through which, and through which alone, a great means of communication between the two countries can be cheaply, rapidly and certainly effected. We are inventing nothing. We are going back to natural arrangements, and we think, that, to interrupt the experiment, is very cruel, and to abuse us because we have, so far, proved the experiment, is something like petty tyranny. But we are a much-forbearing people. We can stand much opposition, whether coming on us, ore rotundo, in Parliament, or infused into us by well-inspired remarks in the press. Why do we bear it with such equanimity? Because we know, by your kind assistance and support, we have achieved a big work, and we intend, you aiding us still, to achieve a bigger one. We are not discouraged, but are encouraged, by what has been done, and we intend to stick to the operation until it is finally and triumphantly achieved. You may say: "After the hard things that have been said of you, what do the Shareholders think?" Well, I will tell you. You know that Shareholders at this season of the year, when everyone is shooting grouse, or wishing they were doing so, are not very ready to attend meetings, and when I tell you that we have 600 Shareholders, and that there are not sixty in the room, you will see, either that there is some little indifference, because they are making holiday, or that they have so much confidence that they do not care to come and look after their affairs. (Laughter.) But I may say, that we have received proxies to the number of 156,364 Shares and 156,364 votes. That is a large preponderance of the total capital of the Company. That is the opinion of the Shareholders. They, also, are not dismayed or discouraged, and are determined to go on. Well now, I think, myself, that it would be a very useful thing for Her Majesty's Government to make an appeal to the great industrial bodies of England, Scotland, Wales and Ireland, similar to that which the Emperor of the French made in France. If our countrymen think it is a very wicked thing to be able to go in twenty minutes to half-an-hour from France to England and *vice versâ*—to save, perhaps, £1 a ton on the merchandise and minerals carried through, and to save in-

finite trouble, suffering, loss—and at last to re-unite France and England—if our countrymen think that that is a wicked thing, let the effort slide till another generation appears with more sense and better feeling. I undertake to say this, and I challenge contradiction, having studied the question closely, that putting aside crotchets, old womanish notions, and preconceived ideas—the bad properties always belonging to a very few—that the anti-tunnel men are men who are anti-Gallican, probably with a German-English bias, and that those in favour of the Tunnel are men who believe in the great brotherhood of nations. If Mr. Chamberlain can see his way to appeal to the commercial bodies of this country on this Tunnel Question, as I suppose I am bound to consider he is personally opposed to the Tunnel—for if not, he must have taken a great deal of trouble and visited much ill-temper upon me for nothing; but if he is opposed to the Tunnel, I should be delighted to meet him in Birmingham, and let the people of Birmingham settle the question between us. I should only make one stipulation—that that great man, Mr. John Bright, who has made Birmingham illustrious by his character and genius, should attend the meeting and give us his opinion—as the friend of his great predecessor, Cobden.

We have heard a great deal in the last few days about some very naughty proceedings of our Engineer, Mr. Brady. I do not know what he has been doing, but they say he has been as wicked as that Lord Say that Shakespeare described in his trial before Jack Cade—

> "Thou hast caused printing to be used, and contrary to the King, his Crown, and Dignity, thou hast built a paper mill."

This paper mill of Mr. Brady's is, that he is accused, under the noses of the Board of Trade Inspectors, and in spite of their teeth—if they have any—of doing seventy yards more of this experimental work than was done before. We deny that. And it is very odd that in a letter from the solicitor of the Board of Trade to the South Eastern Company's solicitor he says: "No complaint has ever been made on the part of the Board of Trade that there has been any breach of that Order."

That is the Order we assented to of course on the 5th of July. With that declaration, that there was no grievance whatever from the 5th July to the date of this letter, which is the 24th July, I should have imagined that Mr. Brady had been guiltless of any offence as between the 5th and the 24th July; but I will tell you what Mr. Brady says about it, for I do not intend that Mr. Brady should be under the imputation of having circumvented the Board of Trade, even for useful purposes. Mr. Brady says: "My instructions were to give to Colonel Yolland " and his assistants every possible facility for their inspection, " and to place the machinery and the staff engaged upon the " works at their disposal, and if need be to set the machinery in " full work, and to engage extra hands," and so on. He says he explained what he was doing, and that a moderate amount of boring would be done, necessitating turning the machine round, so that the air might be let out and pure air let in, and he says that no objection was made. Then he says again, "On " the 22nd July I was informed that the Board of Trade did " not concur in the proposed method of ventilating and draining " the Works, namely, by the use of the existing machinery, and " consequently I at once ordered the Boring Machine to be " absolutely stopped." Then he adds, "The machine was " accordingly stopped, and has not been in motion since, " excepting upon the evening and night of August 4th, when " it was necessary to clear away the mud and water from the " heading, and to perfect the ventilation in readiness for the " visit of Colonel Yolland on the following day." Then he says: "Between the 5th July and the 22nd July" (when we did nothing, according to the Solicitor of the Board of Trade, that was objectionable), "the machine had been working to a " small extent, but only for the purposes stated in the notice " to the Board of Trade of 6th July." He goes on to say that the whole progress of that period, instead of being seventy yards, was only thirty-six yards.

Sir Frederick Bramwell—an engineer of no mean reputation —says, as an engineer of between forty and fifty years' experience, that he entirely concurs in the view set forth in the

affidavit of Mr. Brady, vizt. "that if at the end of the Tunnel "Works there was a short distance of broken strata, it was "necessary to work so far as to reach thoroughly sound ground "wherein to make a sumph for collecting drainage, and that "this necessarily involved a slight extension of the experimental "Tunnel works;" and he adds, "I, as an engineer, if I had to "act on my own responsibility under the Order of the Court of "the 5th of July, should have felt that I was strictly within the "conditions of the Order, which permitted the defendants to "execute all further works which might be necessary for the "purpose of draining or ventilating the existing works." Now, under these circumstances, he says, "The mode of draining the "Tunnel proposed by Mr. Brady is, in my opinion, the only "workmanlike and practical method of dealing with the drainage, "having regard to the fact that the machinery is situated at the "lowest point of the Tunnel, where the water naturally collects, "and to the fact that it is occasionally necessary to work the "machine in order to prevent it becoming useless and corroded "with mud and chalk."

I have the affidavits here of practical men in charge of the machinery, and they swear that everything that Mr. Brady says is correct. They received his orders and rigidly and entirely obeyed them. Then our distinguished friend, Mr. Tylden Wright—perhaps the most able mining engineer in this country—says he has read the affidavit of Mr. Brady, and considers "that no more work has been done since the "5th July than was absolutely necessary, having regard to "the conditions imposed by the Order of the Court of that "day." He says: "The machine is so adjusted as to work as "a ventilator and excavator at the same time, and while other "means of ventilation could, at a certain cost, be provided, "the best and the safest way, and such as any experienced "miner would adopt, would be to work the machine as it was "designed to be worked." Those are the facts of the case, and I do not think that Mr. Brady deserves to be committed to solemn silence in a dark cell with bread and water for any thing he has done in that direction.

Then it must be borne in mind why it is that we have got a Tunnel Company at all. Why is it you are associated together for the purpose of making a Tunnel? Because having offered to Her Majesty's Government that we would conduct the experiments at our own cost—having offered that the South Eastern Company would make a land Tunnel to connect with the underground Tunnel at their own cost,—we said, to start with, to the Government that, looking to great international and other questions, that the ten or twelve miles of length going under the Channel in the direction of France, was an addition of so much territory to the British empire, and ought to belong not to a private company, but to the nation. [Cheers.] I believe that we were right. Well, now, we received certainly some encouragement. It is only about ten months since I received this letter from Mr. Chamberlain. He said:—

"Until the Cabinet meets again I cannot give you an authori-
"tative answer from the Government as a whole [that is, to my proposal that the work under the sea should be Government property]. But I will at once state the opinion of the Board of
"Trade on the questions you raise. We do not think that the
"project is one which should be any exception to the general rule
"by which in this country such enterprises are left in private
"hands. We shall not, therefore, recommend either that the
"Government should undertake the work, or that it should give
"State assistance in any form to the realization of this idea. At
"the same time [now these are the important words] we are
"anxious that no officialism or red tape should be allowed to
"prevent, or even to delay, the undertaking, if private individuals
"are willing to go on with it. [Hear, hear, hear.]

"We have no preferences or prejudices in reference to the
"different schemes which have been suggested. We have to
"satisfy ourselves first that no national interest is endangered
"by such a work as is proposed, and assuming that this is
"satisfactorily established, then we have to consider the con-
"ditions which it may be necessary to impose, and to see that
"the position selected is the most suitable for any requirements
"which may have to be insisted on."

No one can make any objection to that.

The Right Hon. G. CAVENDISH-BENTINCK, M.P.: What is the date of that letter?

The CHAIRMAN: "On board Her Majesty's Ship Galatea, September 16th, 1881." Well, gentlemen, the correspondence proceeded. I got the decision of the Cabinet. The decision of the Cabinet was that this was a private enterprise—that, while the Government would not oppose it, they would not pecuniarily assist it. But in a letter I received dated 15th October, 1881, there first occurred the words "National danger." It was said that it must be seen if any national danger was involved in the undertaking. Well, I then at once wrote this letter, and I think it will be seen that I have acted as clearly as daylight in all this. Well, this letter was from me to Mr. Chamberlain, and is dated October 17th, 1881.—"I presume from "the latter sentence [that is, the 'National danger' business] "that the Government think there may be danger in such a "means of communication between England and France. That "was not the opinion of Mr. Cobden, nor was it the opinion of "the late Lord Derby, whose letter to the late Lord Beaconsfield "on the subject I have seen; but the moment I learn that the "present Government see danger in the completion of such a "project, I should prefer to wait, and not to waste further time "or money in urging on an enterprise which I think the greatest "and grandest of modern, or, indeed, of any times, but which "those in power may dread as dangerous to British interests, "just as Lord Palmerston saw similar danger in the Suez Canal, "happily completed, notwithstanding, in the interests of the "world at large, and of England in particular." (Hear, hear.)

Well, gentlemen, to show you that I have not been as bad as I am represented, I will ask you to listen to a special testimonial to my personal character. The Secretary of the Board of Trade wrote this to me in a letter dated March 6, 1882, which is not, indeed, very long ago: "The "Board of Trade desire me to acknowledge the perfect

" frankness which has been displayed throughout both by " yourself and the promoters of the undertaking, and the readi- " ness you have always shown in affording all requisite informa- " tion. I am also requested to say that Mr. Chamberlain is " obliged for your offer to show him the works, and, as he finds " that the Secretary of State for War is desirous of inspecting " the boring, he has arranged with Mr. Childers, if business will " permit, to go down to Dover by the early train on Saturday " morning for this purpose."

I am sorry to say that, though we had the honour on that occasion of the presence of Mr. and Mrs. Gladstone, of Mr. and Mrs. Childers, of Sir H. Vivian and his daughter, and the daughter of the Lord Chancellor and other distinguished persons, Mr. Chamberlain, from press of business no doubt, was prevented from attending. Matters went on and I was unable to get Mr. Chamberlain to see the works, which I was very anxious he should do, for this reason—all the gentlemen, including Mr. Gladstone, said that if they had not seen them they would not have been able to understand their peculiar character; and I defy gentlemen who have not a practical mining knowledge to justly criticise what we are doing. Therefore, over and over again I said to Mr. Chamberlain, unless you see this work you may some day or other do us a great injustice. Time went on, and we made another appointment for the 25th March for Mr. Chamberlain's visit. The Lord Privy Seal, Lord Carlingford, some gentleman from the Board of Trade, and a not inconsiderable party, met us at nine o'clock at Charing Cross. Mr. Chamberlain was due to go with us; but a quarter past nine came,—the busiest part of the morning,—and everything was in confusion, and Mr. Chamberlain did not turn up. The next day I received from Mr. Chamberlain this note, and I wish you to see that the quarrel with me is of very recent date. His letter is dated Princes Gate, March 25, 1882, and after the first sentence,—I need not read the words,—he says: " Under these circumstances, I have been " obliged to give up the visit to Dover. I have no doubt I

" shall be able to find some other opportunity, but have only " now to express my regret at having been again unable to " keep my appointment, and my thanks to you for your " courteous invitation."

I do not know that one should be looked on as excessively bad under these circumstances. It is quite clear that up to the 26th March there was nothing to indicate an intention of any kind on the part of the Board of Trade to arbitrarily interfere with what we were doing. The 31st March came, and one question I shall ask one of these days is, how it was that on the 31st March (it was the day of the celebrated division at half-past two o'clock that morning) it should have been determined to stop the works of the Channel Tunnel, and have been determined not to give the Secretary, who is the legal officer of the Company, that notification, but to find me out at Folkestone, and surprise me with it, on a Sunday morning, on board one of our ships? This is no doubt a coincidence, but it is rather curious.

Subsequent to that, over and over again we have tried to get an interview with Mr. Chamberlain. Lord Hothfield, Lord Brabourne, Mr. Withers, Mr. Cavendish-Bentinck, and others, and myself, have tried but have never succeeded. We never succeeded collectively in seeing Mr. Chamberlain. There is the position of matters. What we have done is to use our machinery for ventilation and boring at the same time, as we always said we should; and although we do not deny that if we made another arrangement for ventilating, we might do it at a certain cost, we think, as Sir Frederick Bramwell and Mr. Tylden Wright say, it is better to work your machine according to the plan on which it was designed. Under these circumstances, I am happy to say that the work has been completed, and I am happy to tell you that in the course of the year we have taken down to see the works between 600 and 700 very distinguished visitors—royal and distinguished personages of different countries—and I think, in addition to our work, we have diffused a knowledge of what we are doing in quarters where that knowledge may be useful, and enable

leading minds to reason on the question of the Tunnel in future with sounder opinions.

I do not know that I wish to say anything more, except to read a telegram I have had from Berlin this morning. Mr. Madden, of Berlin, called on me the other day, and I gathered from him that he had had an interview and communications with the great German General Count von Moltke, with Count Waldersee and others, and that he was able to state what were the real opinions on the question of the Channel Tunnel of the German Grand Military Staff. He has sent me a number of letters which I shall take care on a future occasion to lay before you, but in the meantime I will read his telegram. I may say first of all that there is a gentleman living at Redhill, who has a bee in his bonnet,—I have no doubt he is a season ticket-holder, and amongst thousands of those gentlemen it is impossible but that there may be a few who have bees in their bonnets. He got hold of a copy of the "Militar Wochenblatt" and it had a long article against the Tunnel, giving military reasons. Our friend at Redhill thought it so good that he got it printed. It was on very bad paper, and in very bad type, but I dare say a number of gentlemen with good eyesight read it. I did not. I will read the telegram: "Pray excuse unavoidable delay "occasioned by my waiting for written disclaimer from Colonel "von Loebell, editor of 'Militar Wochenblatt.' Have just "posted you three valuable autograph documents, namely: "firstly, Count Waldersee's statement to me that article against "Tunnel in 'Militar Wochenblatt' erroneously quoted by "Berlin *Times* correspondent, April, as emanating from General "Staff, had no such source, but was, on contrary, directly "opposed to views of Grand General Staff, Field-Marshal "Count Moltke, and himself;—Secondly, letter from Major "Igel, of Railway Department General Staff—no mean expert "in such matters—condemning article in 'Militar Wochenblatt,' "in very strongest terms, together with very able essay in favour "of Tunnel. Lastly, Colonel von Loebell's letter to me of "yesterday, confirming Count Waldersse's statement made to "me in April last, that article in question in non-official por-

" tion of 'Militar Wochenblatt,' No. 30, 1882, merely gives " private individual opinion of an unnamed army officer, cer- " tainly not that of General Staff or of any distinguished " member of it. Colonel von Loebell adds, that neither Ger- " man War Office, nor Grand General Staff, ever use 'Militar " 'Wochenblatt' for purpose of expressing their opinion on " military matters, domestic or foreign, nor does latter exercise any control over it whatever." I think it is satisfactory to see after all that one after another we are running our enemies to ground.

I do not know that I need say anything more, except that, as we have had a few attacks from another source, I ought to read to you the correspondence that has taken place sometime ago with Lord Richard Grosvenor, Chairman of the Opposition Tunnel, from Biggin Street in Dover to Fan Hole. I think you should know this, because the history of all these joint stock undertakings, whenever there are strong or weak points in them, should be told. A letter was forwarded to me purporting to give the substance of a communication made in May last year from Lord Richard Grosvenor to Mr. Forbes of the Chatham and Dover Company. I thought it was only a gentlemanly thing to let Lord Richard Grosvenor know I had such a letter, so that if it were a fabrication or a forgery he might have every opportunity of correcting it. I therefore wrote to him.

" *May 26th*, 1882.

" My Lord,—I have here before me what purports to be a " copy of a letter from your lordship to Mr. Forbes, the Chair- " man of the London, Chatham, and Dover Railway Company, " dated in May of last year. The copy runs as follows: 'Mr. " 'Bellingham tells me that if the L. C. and D. will go with " 'him he could start the Tunnel in their interests, and not in " 'the interests of the S. E. R., as is now being done. Are " 'you disposed to go into it? as if so, we could start afresh; " 'but if you do not feel disposed to do so, please let me know, " 'as it would be of no use our wasting any more time and " 'trouble if that is your decision.'"

I go on to say—

"My object in troubling you—apart from my duty to advise "you that I have such a document—is to inform you that all our "work has been done with a view as much to the interests of the "L. C. and D. as of the S. E.; and when last year we "proposed to deposit our Bill, terms of union and access were "proposed to Mr. Forbes, to which, however, we have had no "definite reply. We have sought no monopoly, and it is not "our fault if united action failed by the refusal on your part, "and that of your friends, to adopt any plan but your own.

"I have the honour to be, my Lord,

"Your faithful Servant,

"E. W. WATKIN.

"The Rt. Hon. Lord Richard Grosvenor, M.P.,

"12, Upper Brook Street."

Then I received this reply—

"TREASURY, *June 3rd*, 1882.

"I have the honour to acknowledge the receipt of your letter "of May 26th, in which you quote a portion of a letter from me "to Mr. Forbes dated in May of last year. Never having been "able to obtain your co-operation in any way, I naturally have "turned to Mr. Forbes and the L. C. and D., and have felt "always at perfect liberty to do so. It is obvious to everyone "that both lines, the S. E. R. and the L. C. and D., must have "equal powers through the Tunnel by whomsoever it is made, "and I fail to see how a Tunnel, the entrance to which is on "the South Eastern Railway west of Dover, can be much in "the interests of the L. C. and D. I can only repeat in this "letter what I have said in public, that one of the main points "which we always requested Sir John Hawkshaw to keep in "view was the accessibility of both lines, the S. E. R. and the "L. C. and D., to the Tunnel. That always has been kept in "view by him and myself, and I consider is fully met by our "deposited plan.

"I am, Sir, yours obediently,

"RICHD. GROSVENOR.

"Sir E. Watkin, Bart., M.P."

I replied,

"HOUSE OF COMMONS, *June 5th*, 1882.

"In thanking you for your note of the 3rd, I hope you "will pardon me if I point out that your 'deposited 'plan' "merely shows works extending from 'Fan Hole,' on the "coast, to 'Biggin Street,' in the town of Dover. You "have deposited no plan nor made any money deposit for any- "thing more. Thus you propose no connection whatever with "either L. C. and D., or with South Eastern. You will, I "should hope, admit (1) that a Tunnel should, nay, can only, "in practice, be made under the most favourable of the exist- "ing geological conditions; and (2) that it should form part of "the shortest routes between London and Paris. We believe "that we are complying with the first condition; and the com- "passes will show that we are obeying the second, while our "whole project is entire and consecutive, and not a detached por- "tion only of a project. In addition, the proposal made last "year to the Chatham provided for them not only a shorter line "to London, but an alternative route under existing legisla- "tion. It is true that I could not help you in 1874-5, "because I knew that the proposal to go to St. Margaret's Bay "was an error, an error now admitted by your adoption of the "site of Fan Hole, and, if I recollect rightly, Sir Daniel Gooch "and Mr. Laing declined also. But you had the aid of the "names of Mr. Forbes and of the Messrs. De Rothschild's on "your prospectus at that time, and surely you did not need "my humble help. Why did you not raise your money and "go on?"

That is the question. They raised £2,500, and spent it in expenses and salaries, and that is all they achieved. (Laughter.) Then I go on:

"Even now I at least have no personal objection to Mr. "Forbes and yourself making your Tunnel, so long as no friend "of mine is asked to risk his money in it. All *I* want is *a Tunnel.* "My friends have proved that it can be accomplished, where it "can be accomplished, and how it can be accomplished. Their

"experience is a present to you and to all mankind now and "hereafter.

"I have the honour to be, my Lord,

"Your obedt. faithful Servant,

"E. WATKIN.

"The Right Hon. Lord Richard Grosvenor, M.P.

"Treasury."

(Cheers.)

In conclusion, I am happy to say that the French Tunnel Company, having had the advantage of our practical experience in the working of machinery, our machine in its practical working having been from time to time altered so as to make it less liable to break down, and more capable in its action,—have introduced machinery. They introduced the machine called the Brunton machine, which is a system of discs cutting with very great rapidity. That machine broke down, and I am afraid it is too complicated. They have now put up a similar machine to the one we are using, and they tell me that they are coming towards the English coast at the rate of 30 yards a day. If so, that means 180 yards a week, and that means 800 yards a month, which means 10,000 yards or some six miles a year. I should really like to know—and perhaps my learned friend Mr. Cavendish-Bentinck will tell us—what will be the legal position of our country if some fine morning the French come knocking at the English door, and take possession of so much soil under the Channel that ought to belong to English territory. (Hear, hear.) I thank you for having listened so patiently to my long harangue, and I now move the resolution.

LORD HOTHFIELD: I beg to second it.

The CHAIRMAN: Mr. Cavendish-Bentinck will say a few words to us.

Mr. CAVENDISH-BENTINCK: No, I really think after the exhaustive speech you have delivered it would be very unbecoming in me to address a meeting of the Shareholders, especially as there is nothing which you have not fully touched on yourself. But, as I have been

asked by Sir Edward Watkin to say a word or two—I will not make any address, but should prefer to make one observation in the shape of a question which I will put to Sir Edward Watkin, and will ask the attention of the Shareholders, too, as it seems of considerable importance in connection with the subject before us. It has always puzzled me very much to know what the origin of the action of the Board of Trade has been in this particular case. I should have thought that they would have been first to encourage any experiment of this sort. I was once connected with the Board of Trade myself for a year and a half, and I must say, so far as my memory serves me, that the spirit in that department was very different then from what now appears to exist. But the question I wish to put is this: The Board of Trade are objecting in every way they possibly can to this experiment being continued—that is to say, to the Tunnel being extended under the sea. Now, it so happens that a relative of my own is entitled to the possession of the rights of foreshore in a northern county of England, and by means of those rights an adit has been sunk down to a pit for mining operations. He has gone on and extended coal mines for several miles under the sea. Until lately this coal came out of the sea without any objection at all from the authorities representing the Crown; but some ten years ago objection was raised by the Office of Woods and Forests that coal was being won from beyond low-water mark, and no royalty was paid to the Crown. Proceedings were then commenced, but were brought to a close by a compromise, the owner of the foreshore and of the colliery agreeing to pay a royalty, which he was willing to pay, and the Crown was willing to accept. But those works have now been continued to this very day, and pushed on and on. What I wish to ask is: Why—assuming that the Crown will allow tunnels to be pushed under the sea in the northern part of the country, because they get a royalty—why not in the southern part, because they do not get a royalty? What is the difference? What harm do we do to the authorities of this country? A large space, being the works of the Tunnel in the sea, does not in any way interfere with navigation. I suggest to the Chairman of the Company to propose to the Board of Trade that we should pay a very small royalty for the chalk, and then see if they will allow us to go on under the sea there, as my relative in the north of England has leave to push under the sea in any

direction he likes so long as he pays a royalty. I ask you to consider whether there is any logical difference between the two cases. I maintain there is none. It does appear to me that if ever the spirit of obstruction were raised in any Department—it is now in the Department of the Board of Trade—and it is left to go unrestrained by the Government. You have been here a long time. You have heard an excellent speech, and, I dare say, you have better employment than listening to further remarks. My honourable friend has put the whole case before you, and I do not think I can say anything more respecting it than I have said.

Lord Alfred Spencer Churchill: Mr. Chairman, I beg most cordially to support the Resolution which you have made for the adoption of the Report, and I think in doing so every gentleman present will agree with me in expressing our undiminished confidence in you and the Directors of the Company in the further prosecution of the work of this Company. We must remember that all the opprobrium—all the hard words which have been thrown about and which have fallen on the head of our most excellent Chairman have been earned by him in your service. It has been his earnest desire to promote the interests of the Company, that has entailed on him all the ill-feeling which has, I am sorry to say, prevailed. It is very difficult, indeed, to see from what source this opposition has arisen. It is in a great measure a question of sentiment—partly sentiment and partly opposition from another and neighbouring Company. The military alarmist view is another phase of that sentimental question,—a sentimental question which, perhaps, I may illustrate by a rather amusing observation made the other day by an old lady. She said she did not like the making of the Tunnel because she thought it looked like England losing her virginity. (Laughter.) I may tell these sentimental English people that if we do not look sharp we shall find that our neighbours on the other side of the Channel are approaching our shores at a rate they may not like. I should like to know—are the French going to stop at half way? Will they not rather, having made their portion of the Tunnel, continue their operations until a junction takes place with our line, and will they not then be claiming an extra mileage, and an extra share in the control and management of this concern? In a military point of view, if an enemy mines in the direction of a

fort, the true way to defeat his object is to countermine, and to meet him half way; should there be anything in this, then our duty is to continue the Tunnel until we meet our friends on the other side. I maintain that that is the proper course to pursue from a military point of view. The other question is the opposition scheme. I should like to ask our Chairman, in Parliamentary language, whether Lord Richard Grosvenor, the Chairman of this other Company, whose speech I read a short time ago—in which he took great credit for doing nothing—is the same Lord Richard Grosvenor who is a Lord of the Treasury? because, if so, it is his business to act as Government whip, and he has carefully to bid up for the support of Government measures. It is a well known fact that Sir Edward Watkin voted against the Government on a particular occasion, and the following morning he received notice from the Board of Trade to discontinue his work at the Tunnel. It appears to me a very singular thing that a Member of Her Majesty's Government should have any connection with a commercial undertaking. I thought when a member of Parliament took office he ceased to have any commercial connections. I can only reconcile his retaining this connection by his being a scheme which does not exist, or is likely to exist, except on paper. But still we hear a great deal about it, and I should think he was using his influence to support his scheme in opposition to ours. If so, I think Sir Edward Watkin is very heavily handicapped. It is very hard to meet all the opprobrium and objections of certain classes, and at the same time the opposition of a member of her Majesty's Government acting in his capacity of Government whip. With these few observations I beg most cordially to support the resolution for the adoption of the Report. There is, however, one further observation I should like to make. In the Report reference is made to certain boring operations which have been made to the West of Dover—on the line of the opposition Tunnel. You say that there water came in to such an extent that the experiment had to be abandoned.

The CHAIRMAN: The East, not the West.

Lord ALFRED CHURCHILL: I meant the East—the line of the old Tunnel. That appears to be a most significant fact—proving that the old scheme is not practicable.

Mr. BEATTIE: Sir Edward Watkin and gentlemen. I am sure my fellow Shareholders in this Undertaking must be extremely

grateful to the Chairman for the exposition he has given of the history of the Undertaking from its commencement, and the more so, because he has had to sustain a charge which a public man like himself must feel to be one of the most ungracious and unsatisfactory that can be brought against him—a charge of breach of faith with a portion of Her Majesty's Government: and I think he has so completely disposed of that charge in the statement he has made to us to-day that we ought to express to him our grateful thanks in having taken the trouble to give us so much detail and information on the point. With these few observations I support the resolution.

The CHAIRMAN: As no other Shareholder desires to say anything I will reply. The question raised by Mr. Cavendish-Bentinck is certainly a very important one, and there can be no doubt to my mind, that looked at as a dry matter of law—that being empowered as we have been to make experimental works without any control from, or reference to, any one—without any limit of time, or restriction of any kind—it is an illegal thing to go over the heads of Parliament, and repeal legislation, in saying that we shall not make the experiments Parliament authorized. As to the point about the three-mile limit, I am in some way fortified by the opinion of the late Lord Chief Justice Cockburn, whom I think even Her Majesty's Government would say was an able judge. And, remember, that you are in this position—the assignees of the Lord of the Manor, who possessed all the rights usually claimed by the Crown. You are practically by right at low-water mark. Well, Lord Cockburn said, in the case of Regina *v.* Keyn, "beyond low-"water mark the bed of the sea might, I should have thought, "be said to be unappropriated, and, if capable of being appro-"priated, would become the property of the first occupier."

Well, we are the first occupiers, and therefore I have no more doubt than I have of my own existence, that we are legally in our right in occupying that site.

A very interesting article recently appeared in the "Law Magazine," from which I will read you this extract: "Where, then, the sea, or the bed on which it rests, can, consistently with this universal right" —that is, the universal right of navigation by all nations—for there is nothing to prevent any foreign ship coming to within five yards of the English coast. The three mile limit is simply an ancient

phrase. In old days it was thought that a cannon shot would go three miles, and that is the limit inside and outside which one country cannot fish against another, but they can navigate. This is the extract I refer to: "Where, then, the sea, or the bed "on which it rests, can, consistently with this universal right of "navigation be permanently and beneficially occupied, there seems "to be no reason why it should not be occupied like any waste or "unappropriated land, and become the property of the first occupier. "There appears, therefore, to be nothing so far in the rules of in- "ternational law to prevent a French Company from excavating "their Tunnel through the at present unoccupied bed of the Channel "as far as the limits of the English dominion, provided that they "in no way interfere with navigation rights, or to prevent them "from becoming by their occupation and industry absolute owners "of the land occupied against the whole world, subject to the laws "of France alone. Moreover, should the French Government "think fit to adopt this extension of its natural boundaries, there "seems to be nothing to prevent the Tunnel from becoming national "territory of France, unless it should be declared neutral by inter- "national agreement or treaty." That is pretty strong, and the writer winds up as follows:—"The decision in the *Franconia case*, "which appears to negative the general maxim of international "law, that a nation is presumed to occupy all territory within the "limits over which it can maintain an effective control, must, "however unsatisfactory to national pride, be now accepted as the "law of the land, unless Parliament (whose powers by the way to "legislate in the matter *without the consent of other nations* in- "terested, are questioned by some of our most learned lawyers) "should see fit to alter or declare the law as to the limits of the "national domain."

Therefore, I say, as a matter of international law, and English law, and any law, we are not only in our right in going to low water-mark on and through our own property, but right in going as far beyond as we please, having found the territory we at present occupy. But we must look a little beyond legal rights. The Government do not appear to respect them. They make the will of the head of a department their law. There is a very unfortunate fact about the rights of the Crown—and the Crown may mean a jealous or tyrannical bit of a minister: it does not mean the Crown, but the minister of the day, or his subordinate

using the name of the Crown. Well, the Crown brings an action against us or anyone else, and if we beat the Crown we get not a shilling of costs; but if they beat us we have to pay our costs and theirs. I undertake to say that the Board of Trade by their action have taken away five thousand or ten thousand pounds of your money since April. But, alas, you have no redress, and they can harm you to death, and spend the national money in doing so. I think, however,—myself and my colleagues—have looked beyond our abstract rights. We said, What is the interest of this country of ours? Is it their interest that the French people should be permitted to make French territory close up to the English coast, as, under international law, they might? We said, No. We said, Is it desirable that a private company should keep the key?—as I say that we do in the area in which a Tunnel can be cheaply and expeditiously made. So late as the 22nd August last year we proposed that we, having acquired these rights, the Government should buy them, and we should pay them a small acknowledgment—a rent for permission to go on with our works. That is, we would give up our rights because of our conviction of that which was for the national interest. We would fight against spoliation; but we would concede anything if the national good demanded the sacrifice. Things went on, and in February, 1882, I wrote to Mr. Chamberlain personally:

"Will you permit me to inquire whether my suggestion as to the "purchase by the Government of the rights acquired for tunnel "and railway purposes between Folkestone and Dover is one which "meets the approval of the Board of Trade, as, if so, I ought to "propose it formally to those interested."

I never got an answer to that. Then I said further on—

"If you think it better that, subject to title, we should pay a "small acknowledgment to your department, we have not the "slightest objection to do so."

Further, I will read an extract from a letter dated 6th April to the Board of Trade, signed by the Secretary of the Company on behalf of your Submarine Tunnel Directors. He said—

"They are not indifferent" (the Directors are not) "to the "question of national rights in respect of the shore and sea-bed of "the sea of country, and further, their Chairman, appreciating the "situation, has urged upon the Board of Trade to consent to take "over the whole submarine distance to the centre of the Channel,

" but they are ready, if allowed, to complete the driftway through " the three miles limit at their own risk and cost, and to leave that " work as part of the permanent Tunnel, if any, to be dealt with " as Parliament may finally decide."

I do not think it would be possible—I may say so in answer to Mr. Cavendish-Bentinck's question—to imagine anything more clear than our rights, or anything more clear than the forbearing and considerate course we have taken in dealing with the Board of Trade.

I say again, that if Mr. Chamberlain were to say at the last moment, "Go on with your experimental works, and pay us some small amount," we would do so without prejudice to our undoubted rights. We do not wish to be at issue with the Government or the country. My right honourable friend says, "Is there any difference between this and coal?" Only the question of value: coal is a saleable commodity, chalk is not. Therefore with coal there is a reason for what has been done by the compromise, because it is a valuable article. In our case no such compromise can arise. Chalk is not valuable. We are excavating a thing which would never be landed but for the purpose of making a submarine road in that manner. Under such circumstances our rights being, as I believe, invulnerable, and our rights being such as no Government should have tried to confiscate—I say, if the Government are in their right in taking a small royalty for coal from the three miles under the sea at Whitehaven, they are not right in forbidding us from going on in peace, damaging no one, under the sea, also. I will now put the motion. Those in favour of it will signify the same in the usual manner. Those against. That is carried unanimously.

Continuing, the Chairman said: I may say as far as I am personally concerned, that I have been your honorary Director for some time, and intend to continue to be so, with your permission. I am a sort of missionary, I will not say prophet, as regards this question of the Tunnel. I shall have, before the autumn is over, to address some meetings here and there, and I do not want anyone to throw in my face that I receive a farthing of benefit out of this enterprise. I have taken my full share of the responsibility and trust, to take my full share of all further subscription of capital. I have been interested in the work since the negotiation of the French

treaty in 1861—for twenty years—and that interest will only end with my life; but I hope the work will be accomplished before my life ends. For that reason I shall continue to occupy this seat, if you will allow me, and to serve you, as our American friends would say, free, gratis, for nothing. But, as to my colleagues, the case is different. They have been put to expense in connection with this work, and I think that they ought to be recompensed fairly. If there is no objection to that, I shall take care that it is done. It will not be a large sum. Then there is another matter—the Directors' remuneration. The Articles of Association provide that there should be such remuneration, and what I thought was, if three or four of the largest Shareholders would deliberate, the Directors will be satisfied with anything they do. And, therefore, I would suggest that Baron Erlanger, Mr. Schiff, Mr. Byng, Mr. Beattie and Mr. Jarvis, be a Committee to consider that question, and that their report be obeyed by us.—Then that is carried unanimously.

Mr. BEATTIE: I am now in order, I think, Mr. Chairman, in proposing a vote of thanks to you and your colleagues for having so steadfastly and patiently carried on this undertaking. Really to-day we ought to go away most thankful for the exposition you have given of the spirit in which the matter has been conducted hitherto on your part, and let us hope that a better spirit will be manifested towards you in the future.

Mr. Alderman HADLEY: I second the motion.

Mr. BEATTIE put the motion to the Meeting, and it was carried unanimously.

The CHAIRMAN: My colleagues and I are very much indebted to you for your kind vote of thanks on this occasion. We shall continue to press forward this enterprise, and we shall try to solve a number of other practical experiments like those mentioned in the Report. For instance, we wish to see what is the cheapest price at which we can complete a piece of Tunnel, and at which we can widen it. I hope before long to ask you to go down to the works and to see a compressed air locomotive engine that we have put down, in motion.

The proceedings then terminated.

CHANNEL TUNNEL.

REPORT OF PROCEEDINGS

AT

MEETINGS OF THE MEMBERS OF THE

Submarine Continental Railway Company

LIMITED,

HELD ON THE FOLLOWING DATES:—

January 25th, 1883.
Extraordinary General Meeting - - - - *p. 3*

February 22nd.
Adjourned Ordinary General Meeting - - - *p. 5*

March 8th.
Adjourned Ordinary General Meeting - - - *p. 7*

April 5th.
Adjourned Ordinary General Meeting - - *p. 11*

London:

PRINTED FOR THE SUBMARINE CONTINENTAL RAILWAY COMPANY LIMITED,

BY C. F. ROWORTH, BREAM'S BUILDINGS, E.C.

1883.

January 25th, 1883.

Report of Proceedings at an Extraordinary General Meeting of the Members of the Submarine Continental Railway Company Limited, held at the Offices of the South Eastern Railway Company, London Bridge Station, on Thursday the 25th day of January, 1883,

SIR EDWARD WILLIAM WATKIN, BART., M.P., in the Chair.

THE CHAIRMAN explained the special business to be submitted to the Meeting, and moved the following Resolution:—

> That the following Special Resolution, passed at an Extraordinary General Meeting of the Company, held at the City Terminus Hotel, Cannon Street, in the City of London, on the 11th day of January, 1883, be now confirmed, viz.:
>
> "That a Bill introduced in the present session of Parliament entitled 'A Bill empowering the South Eastern Railway Company and 'the Submarine Continental Railway Company Limited, to provide 'improved communication between England and the Continent of 'Europe, by means of Railways and a Tunnel beneath the Straits 'of Dover, and for other purposes,' be and is hereby approved."

Baron ERLANGER seconded the Resolution, and, on its being put to the Meeting, the Chairman declared it to be carried unanimously.

February 22nd, 1883.

Report of Proceedings at an Adjourned Ordinary General Meeting of the Members of the Submarine Continental Railway Company Limited, held at the City Terminus Hotel, Cannon Street, London, on the 22nd February, 1883.

The Right Hon. Lord BRABOURNE in the Chair.

THE SECRETARY (Mr. JOHN SHAW) read the notice convening the Meeting.

The CHAIRMAN: Gentlemen, Sir Edward Watkin, your Chairman, is not here to-day, for the very good reason that the objects for which the Meeting of the 11th January last was adjourned have not yet been attained. It was adjourned for the purpose of hearing the intentions of the Government, and those intentions have not yet been declared to us. Sir Edward has, therefore, requested me to attend here to-day for the purpose of adjourning the Meeting to another date—the 8th of March—by which time he trusts we shall be able to ascertain the intentions of the Government, and therefore be able to place fuller information before you as to the position and prospects of our Company than we can give until those intentions are declared. I, therefore, move—

> That this Meeting do stand further adjourned until Thursday, the 8th March, 1883, at 12 noon, at this place.

Mr. ALFRED THOMPSON: I shall have much pleasure in seconding it.

The CHAIRMAN put the motion, which was carried unanimously.

March 8th, 1883.

Report of Proceedings at an Adjourned Ordinary General Meeting of Members of the Submarine Continental Railway Company Limited, held at the City Terminus Hotel, Cannon Street, London, on Thursday the 8th March, 1883,

SIR EDWARD WILLIAM WATKIN, BART., M.P., in the Chair.

THE CHAIRMAN: Gentlemen, this is an adjournment of the Ordinary Meeting of the Submarine Continental Railway Company. It has been adjourned once before, and we shall have to ask you to allow us to adjourn it again; and, therefore, "I move that this Meeting stand adjourned to Thursday, April 5, at the same hour and place." In the meantime I need not remind you that the object of our adjournment was to ascertain the decision of Her Majesty's Government upon the question of Tunnel or no Tunnel. So serious a question as that of continentalizing England by uniting it once more, as in olden and prehistoric times, to the Continent is, one would imagine, a subject which would lead the Government to consider the very serious nature of their own responsibility. Some one has said (I think it was Sydney Smith) that a "board" is a "screen." I am very much afraid that upon this question of the Channel Tunnel Parliament is going to be made a screen, and instead of the Government saying out and out, we are in favour of, or we are against, this Tunnel, in some form or other, the initial responsibility is to be left to a Parliamentary Committee. *Tot homines, tot sententia.* What the outcome may be under these circumstances we cannot tell. However, I

see that during my short absence from England two speeches of importance have been delivered—one in the House of Lords by the Marquis of Salisbury, and the other in the House of Commons by Sir Stafford Northcote; and both of those gentlemen, the leaders of a great Parliamentary party, have expressed their opinion that the Government, prior to the appointment of any Committee, ought to tell the country whether they think there is, or is not, something that ought to be inquired into. I need not say, as a Shareholder in this Company, and as one who has spent a good deal of his own money and a great deal of his own time, over a long period of years, in endeavouring to bring this question into practical form, that I do not think we should be well treated if the Government do not tell us, and tell us before long, exactly what their own views and intentions on this subject are. If they should tell us that the wisdom of Parliament or the prejudices of our countrymen incline to think that it is very much against the interests of England that England should be connected with France and the Continent, and that they concur—well, we cannot help it. We have done our part, as men and as Englishmen, in promoting a great work, and if the public sentiment of our country or the wisdom of Parliament does not coincide with us, it cannot be helped. We have spent so much money, but we have not spent it in vain, as we have shown not only that a Tunnel can be accomplished, but how it can be accomplished, and we have accumulated facts which enable us to calculate very closely as to the time it would take to complete this, as we think, noble work, and the cost which would be involved in its completion. Now, on the other side of the Channel, where there are no fears and no scruples, where every one without exception thinks that to connect France with England would be a great measure of peace, of commerce, and international relations of the best kind, they are making very considerable progress. They have not yet quite reached to the distance you have attained, but they are within 200 or 300 yards of that distance. You have excavated about 2,020 yards under the sea and sea level; they have excavated, by using the machine we tested and improved, in the first instance, about 1,800 yards. Now, I had an interview the other day in Paris with that most eminent engineer M. Raoul

Duval. M. Raoul Duval is the directing mind of the French Channel Tunnel works, and he is undoubtedly at the head of the mining engineers of France. I doubt if there is a man more eminent,—probably if there is a man so eminent,—in his profession in Europe—certainly not in England. M. Duval is one of those men who never express an opinion till they have tested theory by practical experience; and, collecting that experience into the form at last of a declaration, M. Duval has assured me that he sees no difficulty in so improving the tunnelling machine now at work, that he can tunnel a bore of 18 feet in diameter—quite sufficient for a single line of rail—and that he can accelerate the speed of his boring to a capacity amount of about 40 yards a day, or rather 40 *mètres*, which is 44 yards, a day. That you know is 300 yards a week, or 15,000 yards a year, and that means that if we all put our shoulders to the wheel, and went at that speed on both sides of the Channel, we could prove in eighteen months, finally, whether the Tunnel could be made without doubt or question. Why? Because we should then have a gallery of 18 feet in width, or whatever width we might agree on, from one side of the Channel to the other, and then any shadowy ideas about an influx of water, or unexpected fault, or some other difficulty—which practical men like ourselves think very little of—would entirely disappear before the light of thorough, complete and final practical proof. I for one as an Englishman, loving my own country and no other, believe it would be eminently for the interest of England to connect England with France by way of a Tunnel. I know that there are some who say that it is only to prevent a few old ladies—and old gentlemen who ought to wear petticoats—from being sea-sick in crossing the Channel. Nothing of the kind. The mere obtaining of comfort in travelling, is only a very small drop in the ocean of advantage, which would come from the construction of the Channel Tunnel. Practically it means that English ideas of liberty, and of free exchange, would more and more dominate on the Continent. That is a moral advantage. It again means that all those restrictions to trade and the great interchange of commerce would gradually disappear before constant intercommunication between the peoples. If ever there was a permanent, if unwritten, treaty of peace and pledge

of fraternity between France and England, it is the Tunnel. (Cheers.) A great French statesman said to a friend of mine the other day that the difficulty he found among French politicians, was, that they knew so little of England. Well, I think, we might almost say the same thing here—that we know so little of France. If the two countries, meaning always the whole peoples, had an intimate knowledge of each other by constant intercommunication, producing mutual interests and dependences, the whole system would be revolutionized in the interests of peace and the true progress of the human race. (Cheers.)

I don't know that I have anything further to say except to ask you to be good enough to allow us to adjourn to this day four weeks, in the hope that by that time the Government may have declared themselves and that we may hope to be engaged, or be about to be engaged, in that inquiry in which, if the tribunal is impartially selected, as we have no doubt it will be, we shall have no fear of showing that what we propose is for the public good, and that our enterprise is not only feasible, but easy of accomplishment.

Lord ALFRED SPENCER CHURCHILL: I have great pleasure in seconding the motion for the adjournment of the Meeting.

The CHAIRMAN put the motion, and declared it carried unanimously.

April 5th, 1883.

Report of Proceedings at an Adjourned Ordinary General Meeting of the Members of the Submarine Continental Railway Company Limited, held at the City Terminus Hotel, Cannon Street, London, on Thursday, the 5th April, 1883.

SIR EDWARD WILLIAM WATKIN, BART., M.P., in the Chair.

The CHAIRMAN: Gentlemen, this is an adjourned Meeting for the object of reporting to you what the views of the Government, as to the prosecution of the Channel Tunnel, may be. Everyone, no doubt, has seen the newspapers; and, therefore, is aware that the night before last the Government carried, by a large majority, their proposal for the appointment of a committee of the two Houses of Parliament to consider and report whether it was desirable to connect England with France by a communication under the sea; and, if so, what precautions or stipulations should be attached to that proceeding. I believe that to-night the House of Lords will be moved to appoint their section of this joint committee. If that is so, then it seems to me that there should be an immediate commencement of an inquiry, and we should wait, with all proper patience, for the result. Now, you have noticed that in the discussion the night before last, Mr. Gladstone, who, in years gone by, was a very warm and earnest advocate of the Tunnel, said that the Governments, of both parties, were committed, as I understood him, to the Government of France—that is to say, that those who represent the great Conservative party were committed, and those who represent the great Liberal party were committed. Then Mr. Gladstone went on to say that Parliament was not committed. Now I confess, it seems to me (an old-fashioned person) that the two great parties in the State are, if

anything is, the House of Commons; that if the late Lord Beaconsfield and the late Lord Derby committed their Government, they committed the Conservative party so far as they could control them—that if Mr. Gladstone and Mr. Bright, the late Lord Clarendon, and the present Lord Derby, and others, committed the other side of the House, that they committed their party, so far as they could control them. Therefore, it is a new doctrine to me, that if Governments (which are simply the mouth-pieces and creations of the two parties that divide the Parliamentary government of the country) commit themselves to a foreign nation upon a great question of this kind—it is new to me to say that Parliament is absolutely and entirely free from responsibility. However, gentlemen, be that as it may, you would have observed that the only member of the House who spoke in a somewhat acrimonious manner against the Channel Tunnel, was our excellent friend from Lancashire, Sir Richard Cross. I always thought that Sir Richard Cross was excessively sound, and perhaps, one of the best Home Secretaries we ever had. But, I confess, it seems to me that he spoke of the Channel Tunnel,—and of those who are doing their best to realise that grand object,—very much as the Jews spoke to St. Paul in olden times. They said, "For as concerning this sect, we know that everywhere it is spoken against." (Laughter.) Now, Sir Richard Cross said that nine-tenths of the people of England are opposed to the Tunnel. But all the indications we have at command show that although there has been—as there always will be—a ruffle of prejudice on the surface, the deep well of thought of the people of England has not been corrupted, to any great extent, by the heresy, as we consider it, of opposition to the Tunnel. But people say, "Look at the London press,—all the daily papers are opposed to this scheme of yours." Well, I may tell my fellow-countrymen—as one of the very few members of Parliament now in the House who were active promoters of the Anti-Corn Law Association, and the Anti-Corn Law League—a rather singular fact: When we were agitating for the total, immediate and unconditional repeal of the Corn Laws, there was not a single morning paper in London that supported us,—save one,—and we bought that paper. The only paper that

went in with us for the total, immediate and unconditional repeal of the Corn Laws from the year 1839 to the year 1843, was the "Sun,"—a paper that has expired, and was expiring then, and we had to pay for its services. That was the paper that reported our long speeches, and that did what you, gentlemen of the press call, "justice" to Mr. Cobden, Mr. Bright, and Mr. Villiers. That was the only daily paper that reported the speeches in full, or wrote any leading articles absolutely in favour of that movement. And yet in three years from 1843 we carried the total repeal. In regard to the Press opinion of London and in some parts of the country, I undertake this—that with the assistance of any one of the gentlemen of the press at this table, I would name a dozen men who constitute the whole of this public Press opinion against the Tunnel. I say that no one can deny that. Of course we know that there is an architect who built Baron Grant's place at South Kensington who has been very active in the question. But all that is a got-up business. It is the foundation of his Magazine. It is his "oyster." I should like myself a proper appeal made to the whole people of England. We Tunnel men agree with Mr. Cobden that the Tunnel is the "true arch of union" between England and France. We agree with the Prince Consort that the Tunnel is essential in order to prevent the commercial isolation of England. Because surely men who can think will bear in mind that all over Europe railways are extending—under mountains, and across rivers, and in every direction,—and the whole of Europe is becoming practically, for purposes of interchange, one country. Well, if Europe is to be united in that way, how long—unless we have some means for the transport of material and of produce without breaking bulk —how long will it be that London, Liverpool and Glasgow, and the great ports of England and Scotland, will be placed into, and from which will flow the great world's commerce from the different quarters of the globe. How long will our country be the great entrepôt of the world? It is obvious if we are to find Europe bound together in every direction by railways, and we do not connect ourselves with those railways, and so make England, continental, that importation will be more and more to the Continent, and less and less to England, and the Continent

will provide its own deep-water ports and cease to use ours. That is obvious, and I say in answer to one or two prejudiced people who have talked about our damaging the mercantile marine, that we are going to save the mercantile marine. Look at the matter in another way—the dependence of England on supplies of foreign food. Mr. Bright told us the other day that half of the common food of our working people is now drawn from abroad. And how long are we to risk dependence on the sea, and the sea alone, for the food of our people? It is obvious that we are relying on the naval supremacy of the country. We, as Englishmen, believe that that will continue; and that there is nothing at present that will interfere with it. But why should we rely on there never being a combination of circumstances to endanger that supremacy? Why not have means, in addition to the sea, of connecting ourselves with the Continent; and for purposes of the interchange of commodities and the intercommunication of peoples, be able to do without crossing that miserable Channel? Some people say that this is a question of a few old ladies who do not wish to be sea-sick. But mere personal comfort is the bare fringe of the question. The question is, to maintain and extend the commercial supremacy of England, and to avoid its isolation from the causes to which I have alluded. I think, myself, that our course is very clear, until Parliament through this joint committee has made up its mind, we must simply maintain the works we have constructed from damage, and keep them in such a state that anyone who wishes to see how, and where, to make a tunnel, can go and inspect our works as occasion may require. I take for you and myself, and the Directors, and every one concerned, well-deserved credit for what we have done. Three years ago it was a question of doubt whether a Tunnel could be made at all. No one doubts that now. It was also a question of controversy, how it could be made. We have shown how it could be made. It was a question of engineering exaggeration as to the cost of the work. We have, to a large extent, brought that question, of cost, into limits. It was also a question of how long this work would take to complete. We have also brought that within measure of calculation. We have shown, then, that it *can* be done, *how* it can be done, and have given the elements for calculating *how*

long it will take to do it, and *what it will cost* to complete it. I think that is a great work, completed ;—something of which any combination of men have a right to be proud. Well now, the great political question behind it all is this—it is a question which men like Mr. Gladstone and Mr. Bright and Lord Derby and Lord Salisbury ought to take into their most serious consideration—shall the future policy of England be one of isolation and separation, or shall it be in the direction of that fraternal intercourse between people and people which Cobden called "the great marriage of nations"? We cannot be reproached hereafter for our part in that discussion. We have aided in every way to bring about union and inter-communication; and we know—and every sensible man must know —that a policy of isolation and separation between nation and nation is simply ante-dating the time of a declaration of war. I have no more doubt than that we are all now in this room, that a policy of isolation from France, and suspicion of the French Republican Government, means, in another twenty years or less, going back into those bloody paths which have exaggerated your National Debt and caused so much damage and retardation to civilization and the progress of mankind, in peace and well-being. (Cheers.) We are guiltless. Whatever happens, we have done our share of a great practical work. We must wait with patience and hope. The responsibility is grave. But it rests upon Her Majesty's Government. I do not know that it will be necessary for us again to adjourn the Meeting. I think the object we had in view has been accomplished, and I thank you for your attendance this morning. (Cheers.)

The Hon. JAMES BYNG: I think we should thank you for the explanation which you have given so well, and I move that a Vote of Thanks be given to the Chairman.

Col. SURTEES: I second the motion with a great deal of pleasure.

The motion was put to the Meeting and carried unanimously.

Lord BRABOURNE: Sir Edward asks me to say a few words, but really I do not know that there is very much to say. Sir Edward never speaks on this or any other occasion, with respect to the affairs of a Company of which he is chairman, without throwing as much light on the subject as it is possible to throw.

All that he has said, I entirely endorse, and I believe,—although our success in this Channel Tunnel enterprise may be delayed,—it is only a matter of delay. Its success in some future time is as certain as that we are in this room. We are often told when we refer to the views of Cobden as to "the marriage of nations," that we are holding views too elevated for the common run of humanity. Well, if I am wrong, I am not certain that I would not rather hold views that are too elevated than the reverse, but I am not sure that we are wrong. On the contrary, I entertain a firm belief that the best way of promoting the brotherhood of nations is by promoting the principles of Christianity; and it is as a Christian and a patriot that I feel it desirable that English notions and English views should become more powerful on the Continent, and I believe that they will become more powerful in the measure that access between peoples is facilitated. The more we know of other nations, the more we shall understand how to get rid of our prejudices and teach them to get rid of theirs. And when nations get to understand each other better, then the probability of war will decrease, and the advance of the most beautiful and most religious sentiments of the world is more likely to be facilitated and to increase. I believe that in every point of view the Channel Tunnel is an object very desirable to be supported by those who love their country, and who have a wider love than their country—those who love mankind. I believe it is a project that is sure to make its way, because it is founded on the very best and highest principles. I am not at all afraid of being laughed at, and of being told that we are going to relieve England of something she has hitherto possessed. I am not afraid of such a taunt, and I believe that the time will come, when those who use such taunts will look back with sorrow and regret, just as many people now despise themselves for having opposed many other great projects which time has proved to be most essential to the progress of mankind. We have done our best. We, the Directors, intend to stand by the project, and though it may be delayed, I hope the time is not far off when we shall meet you in this room, or in a larger room, with a very much larger audience to celebrate the triumph of this great achievement of modern times. The skill, enterprise, and energy of those connected with the work will not allow it to be delayed longer than can be helped. (Cheers.)

The CHAIRMAN: I do not know that we have anything more to trouble you with, but we are much obliged to you for your vote of thanks. We need not adjourn again. As soon as we know anything definite about the proceedings of the Committee we will call you together to make a further report to you.

CHANNEL TUNNEL.

REPORT OF THE PROCEEDINGS

AT THE

FIRST ORDINARY

GENERAL MEETING

OF THE MEMBERS OF THE

Submarine Continental Railway Company

LIMITED

HELD AT THE CITY TERMINUS HOTEL, CANNON STREET, LONDON

On THURSDAY, JANUARY 11th, 1883.

SIR EDWARD WILLIAM WATKIN, Bart., M.P., in the Chair.

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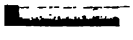

THE

Submarine Continental Railway Company

LIMITED.

Report of Proceedings at the First Ordinary General Meeting of the Submarine Continental Railway Company, Limited, held at the City Terminus Hotel, Cannon Street, London, on Thursday, the 11th January, 1883.

The CHAIRMAN (Sir E. WATKIN): Gentlemen, it is less than a year since the first Meeting of this Association. In that time we have made no inconsiderable progress, both as regards the experimental works, and also in the discussion of the great question involved in our undertaking. No one, whether he be an expert or not, has now the slightest doubt that the making of the Tunnel is feasible. No one doubts that it can be completed in a short time, and for a very much less cost than originally anticipated. To have proved that the work is practicable—a work of such magnitude and singularity—is, to say the least, an effort of which you, who have been the authors, have reason to be proud. But, in addition, we may claim to have made the question of connecting France and England by a tunnel under the sea a question of world-wide discussion. In every country in the world—certainly in every English-speaking country—the question of the Tunnel has been, and is being, the discussion of the day. And it is very sad to know that the only nation in which there is a whisper of dissent to that which is the only remaining question—not whether the thing can be done, or how it can be done, or what it will cost—but whether it ought, considered as a national question, to be done at all—the only country in which there is a whisper of dissent to our proposition is this country of our own. I remember very well, when that great man Prince Albert proposed the Great Exhibition of the Industry of All Nations in 1851, there was exactly the same kind of

querulous attack. If the proposer of that great measure of peace—great measure promoting the friendly rivalry of industry between nations—great measure enabling one people to become informed of the industrial condition and prospects of every other—if the proposer of it had been anybody less than Prince Albert, that great effort would have been smothered under the prejudices of the time. (Hear, hear.) If I needed to call a witness, it would be sufficient to read a very short extract from the Queen's Diary. When it was all over, and when everybody rejoiced, and when those who were wise before, and those who were wise after, the event, mutually congratulated each other upon the vast success of the Exhibition—Her Majesty wrote in her Diary these words:—"Albert's name is immortalized, and the wicked and absurd reports of dangers of every kind, which a set of people, viz., the *soi disant* fashionables and the most violent Protectionists, spread,—are silenced." (Cheers.) Gentlemen, I hope that Her Majesty, when she writes a further Diary, after having opened this Tunnel between England and France, as I prophesy, she will—will record a similar answer to the prejudices of a small portion of mankind. (Cheers.)

There is one man in Europe, at all events, who deserves to bear the combined title of statesman and philanthropist. I mean the present President of the French Republic, M. Grévy. In reply to an address from some English working-men a short time ago, he uttered these words. He said:—"The construction of the Channel Tunnel would be a magnificent work, fruitful in happy results." He went on to say:—"France has none of those feelings of anxiety which seem to haunt the minds of some persons, but which it is not for me to discuss." And he added:—"It is for your fellow-countrymen in England to reflect and decide whether England prefers isolation and separation. She is the best judge upon that point." Now, the history of England and France over hundreds of years has been a history of conflict. There are, as far as I remember, two bright periods—periods of peace and amity and good faith between the two countries. All that our great wars have done has been to show the gallantry of the two peoples—perhaps with a little more of dash and enterprise on the part of the French, and a little more of

solidity on the part of the English. The pages of the history of England and France are dabbled in blood. Well, what are those two bright spots in history? They are, first, the three years which followed the treaty of commerce and amity concluded with France by the great statesman, William Pitt, in 1786—between the year 1786 and the breaking out of the Revolution in 1789, and, secondly, the period of twenty-one years which has intervened since that great man, now no longer, unfortunately, amongst us, Richard Cobden, concluded the commercial treaty with the Emperor of the French. (Cheers.) I will ask our military objectors—whose objections, if we probe them down to the bottom, simply mean that they believe that, sometime, that game of blood between the two countries will be resumed—I ask them if there has been a whisper on either side of the Channel of conflict between England and France in that period of one-and-twenty years since 1861? (Cheers.) Well, what does that mean? Why, it means that if you ally people together by their interests, they cease to think of fighting: they think of mutual aid and assistance, and mutuality of commerce. It is their interest to be at peace, and not at war. It seems to me, in the present state of political parties in France, and in view of the conflicts between capital and labour, as they are called, on this side of the water—that there would have been nothing more likely to cement classes together and to produce feelings of fraternity, than the great idea of connecting England and France together physically, as they were connected in the morning of the world. (Cheers.) I feel, myself, rather ashamed of some of my countrymen when they talk about dreading an attack from France or any other country. (Laughter.) The moment we are so weak that we can be attacked, we deserve to be. For myself, I believe, in the manhood and solidity of my countrymen. (Cheers.)

Now, we have had some brilliant testimonies as to the value of connecting the two countries together. What was the argument of the great Prince Albert about it? That England might be isolated by the railway union of Europe; that great hostile combinations, commercially, would develope against England. Then Mr. Cobden said that "the true arch of alliance between the two countries was the Tunnel." And he said, also, "that good feeling"—(the feeling between the upper

classes of countries)—"ought to penetrate the masses of the two nations." He advocated, in his usual terse words, "the marriage of peoples." I remember well, listening to a speech delivered—when he came back from his tour, after the conclusion of the great struggle of free trade—in Manchester. I think it was in the year 1846. At that time there were disagreeable and hostile discussions going on about what were called then "the Spanish Marriages." Louis Philippe had overshot his mark by thinking to do a particularly smart trick in the matrimonial way. Within a couple of years he lost his throne. Mr. Cobden then said: "We hear these disquieting rumours about the marriages of these great dynastic people: I am the advocate of the marriages of the people themselves." And he showed how the system of intercommunication, existing as it did then only by means of railways and steamboats, was gradually providing for the union of mind and sentiment between peoples. (Hear, hear.) For myself, I am a cordial and enthusiastic advocate, I may say, of the Anglo-French alliance. (Hear, hear.) I believe that if England and France are associated together on honourable terms, the peace of the world is secured; and that if there are wars elsewhere, those wars will arise through want of understanding between ourselves and our neighbours 20 miles distant from our shores. (Cheers.)

This Tunnel, as far as I am concerned, is no new thing. I remember, on the 3rd March, 1872, meeting M. Thiers in the Préfecture at Versailles, on the question of the passports, which, after the Commune, the French Government for a short time re-introduced. M. Thiers was always fond of ascertaining the views of Englishmen upon various subjects; and one of the subjects we discussed was the Channel Tunnel. I have seen, in English and French papers, the statement that M. Thiers, that sagacious man, was opposed to connecting England and France by a Tunnel. Well, I am a living witness to the contrary. M. Thiers said: "My only difficulty is, that, from the information I have got, it would take so long a time that I am afraid it will never be done. If it can be done," he said, "it is the great work of civilization of the century. Yes!—of any century!" (Cheers.) Well, I had to see that great man, now departed, M. Gambetta, on the 31st May, 1878, in company with Lord Brabourne. We had to see M. Gambetta to remove

some difficulties out of the way with regard to the works to improve the harbour of Boulogne; and M. Gambetta himself raised the question of the Tunnel, saying that, if the Tunnel were only made, "that would be perfect;" that the improvements of the harbour would be only, to use his phrase, "alleviations." (Hear, hear.)

Gentlemen, I think I may at this meeting do that which I declined to do at your first meeting, about eleven months ago, namely, speak of the cost—the probable cost—of making a Tunnel under the Channel. Now, it is all in a nutshell. I dare say that Mr. Brady, there, or any other engineer, will ask "What on earth does this man, who does not profess to be an engineer, although he does think perhaps he knows as much about it as they do—what has he got to do with making a sort of probable estimate?" Now, I am at present in negotiation with people to make a Tunnel, a double-line Tunnel, through one of the hardest stratified rocks I know—a Tunnel of $3\frac{1}{4}$ miles in length. The price they ask—and I don't intend to give so much—is £38 a yard forward—that you may say, speaking roughly, is about £65,000 a mile. I take that as a fixed point, and I say—What is the *plus*, and what is the *minus*, of that price per yard forward, or per mile? The *plus* of it is simply the extra "lead." If you take our Tunnel, the whole distance across—to those who take this point of view I make a present of the extra distance. Assume that the lead of my Tunnel of $3\frac{1}{4}$ miles, which we can work at both ends, is $1\frac{1}{2}$ miles; and that the lead of the Channel Tunnel, of 24 miles, is half of 12 miles, if you like: then the difference of cost, as regards taking the material away, and bringing the material for construction in, is just the difference in cost between $1\frac{1}{2}$ miles and 6. We know very well at what price we can carry a ton 6 or 12 miles. You may put it at 1*s.* Under these circumstances, as explained by Mr. Tylden Wright, the cost of conveyance, with proper machinery and appliances, cannot be much more than 1*d.* per ton per mile. That, as far as I work it, would make this long Channel Tunnel, as regards the conveyance of material—would make the cost, if you like to *plus* it 50 per cent. for risk—1*s.* 6*d.*, as against 3*d.* per ton. Then, what is the minus? The deduction to make is the entire difference in the material to be excavated. The material in

this Tunnel of 3¼ miles is so excessively hard that it cannot be worked by machinery, or, if it can be worked by machinery, it must be worked at a much greater cost, and must take a very much longer time. I think myself you might almost set against the greater cost of "lead," as we call it, the lesser cost of the process of excavation. When, in addition to that, we know that this material is especially suited to be operated upon by machinery, and we have a machine so good as Col. Beaumont's, a model of which you will see at the other end of the table, which Mr. Brady, after the meeting, will explain,—when we see that, we may, I think, make up our minds that the cost of this Tunnel will not very much exceed what it would cost if it were a Tunnel on land, instead of a Tunnel under the sea,—then, if that is so, it comes to a ridiculously small question. We were told, that it was to cost £4,000,000. We were told this by a very eminent engineer, and then he said that, though it would cost £4,000,000, yet, as there might be some uncertainty about it, he would just double the amount and make it £8,000,000. Instead of taking this £65,000 a mile, take it at £100,000 a mile. Then it means that for this 24 miles, as I believe it is, £2,400,000 is the cost of the Tunnel under the sea. I think our estimate for connecting a Tunnel under the sea with the Chatham and Dover and South Eastern Railways, is about £350,000—somewhere about. I think it ought to be done for less. Supposing, then, that it costs as much on the other side of the water, you have, practically speaking, a little more than £3,000,000 of money to do the whole of this hitherto considered difficult, dangerous, and uncertain work. I believe that this calculation, when it comes to the test of practice, as I hope it will, will be found to be not very wide of the mark. I say, then, that if that is so, it ought, in my opinion, to be about one of the most profitable enterprises that it is possible to undertake. (Hear, hear.)

I have a memorandum handed me here from my colleague, Mr. Withers. He points out that the Government have just arranged with the London and North Western Railway Company to accelerate the mails to Ireland one hour. As Mr. Withers puts it, this Tunnel will accelerate the mails, one way and another, certainly two hours, not only between England and France, but between England and all Europe, and between

England and all India. And, as Mr. Withers puts it also, if it is so important to do that as regards Ireland and this country, how much greater is the importance of doing it with regard to this country and all the world? (Hear, hear.)

Now, I am one of those who think that a Tunnel under the sea ought to be the property of the Nation. I have advocated that with the Government; but the Government have thought fit to say, as the correspondence shows, that the work is not to be taken out of the category of those works which in this country are usually executed by private enterprise. We are now, gentlemen, in this position. We are waiting, I may say, for the verdict of the Government and Parliament. I have told you the opinions of Prince Albert and Mr. Cobden, of M. Grévy, the distinguished President of the French Republic; of M. Thiers and of M. Gambetta; and I ask you, as English citizens, whether it is not time that somebody, on the part of the Government, does that which the Government has hitherto been silent upon—announces to us whether the disciples of the policy of the late Mr. Cobden believe in him still, or whether they think that this policy of isolation and separation is to be reinstituted between England and France? (Hear, hear.) I do not think that a Government has the right, on so important an International question, to preserve absolute silence. I think that before we get into Parliament with the Bill, about which I shall speak in a moment, Mr. Gladstone, and Mr. Bright especially, as the friends and assisters of Mr. Cobden in the French Treaty, ought to give their opinion before the public, with no uncertain sound, and let the English people know what the leaders of the popular party now think about it. (Cheers.)

Financially, until we know the decision of Parliament, we can simply preserve our works and stand still. Therefore, the resolution which the Directors have come to is: "That, pending the action of Parliament, the expenditure of the Company be limited to the cost of preserving the works and machinery in repair, good drainage, and ventilation. That, pending such action, no further call be made upon the shares of the Company without the sanction of a meeting of the proprietors duly summoned for the purpose." We thought it our duty to have no uncertainty whatever with regard to these matters. (Hear, hear.)

Now, before I sit down, a word as to the progress that is being made by our friends on the other side of the water. I have got a letter from that eminent engineer, M. Raoul Duval, who has the direction of the French works, and with your permission I will read you one or two short extracts. He says:—"Concerning our works at Sangatte, I am happy to say they are progressing quite favourably. We have reached now from the shafts in our heading, a distance exceeding 1,000 *métres*, or about 1,100 yards. We are under the sea at high water some 150 yards from the foot of the cliff. We begin turning to the left to come to a direction nearly parallel to the shore, intending going afterwards straight under the Channel 600 *métres* more, which will be sufficient for the complete survey of the *quenocs*. The quantity of water continues to be limited, and often for some long space the rock is met with, quite dry. The machinery for compressed air is working beautifully. . . . . In December we reached up to twenty yards in twenty-four hours. We are sure that the cost of driving the heading, with proper accommodations, may come down to a very low price. We have also experimented the nature of the gault, and are aware one could, if needed, get in these clay beds seven or eight yards without difficulty." That is to say, that not only is the grey chalk free from water, but the gault clay is equally free from water, and available for the purposes of the Tunnel. I mention that because it disposes of an objection some people have raised, that we cannot go entirely from side to side through the grey chalk. I believe that to be an absurd idea; but if it were necessary, for purposes of gradient, or anything else, to depress the line, and get out of the grey chalk and into the gault, clearly the gault is just as favourable as the other to go through. (Hear, hear.) Then, M. Duval says:—"To conclude, all technical prospects are most satisfactory, and should the political objections be put aside, I trust that by mutual efforts and good understanding, we could lead on to success the great scheme to which, on both sides of the Channel, we are devoting ourselves, with legitimate and increasing hope of triumph." (Cheers.)

Gentlemen, I do not know that I need trouble you with any further words. As far as I am concerned, I am ready to provide my share of the capital, and to take even more than my share

of the risk and responsibility, and either lead or drive as the shareholders may see fit and think best. I had a letter, by-the-bye, this morning from a gentleman at Bolton, making a complaint, which as it is political I ought to mention to you. He says he thinks it is a very improper thing that on a Board representing a great idea—a great International idea—all the Directors should be Tories. (Laughter.) Well, there is my Lord Hothfield: I believe he has been suspected of a little Radicalism, but I never heard that he had been suspected of Toryism. (Laughter.) Then there is my Lord Brabourne: although he does occasionally vote against the Government when he thinks they are wrong, yet I believe he is as staunch a Liberal as he ever was. I believe that I am a staunch Liberal—I always have been. Nobody ever worked more for the Liberal party, and so I intend to continue. There is Mr. Mewburn: he represents a very important religious body, and is a good Liberal. I believe there are one or two other gentlemen who are rather inclined to be Tories. (Laughter.) But they are Tories of a very Liberal character. (Renewed laughter.) So we are a majority of Liberals, and therefore I hope my friend at Bolton will console himself with the thought that in the credit of carrying out this great idea both parties will be alike represented. (Cheers.) I have now to put the Resolution:—

> "That the Report of Directors and Statement of Accounts to the 31st December, 1882, be received and adopted."

Mr. E. CAZALET: Mr. Chairman and Gentlemen, I have much pleasure in seconding the Resolution. As this is the first time that I have had an opportunity of assisting at a Meeting of this Company, I hope I may be allowed to say a few words on the present position and prospects of this great undertaking. In an undertaking of this nature, it is natural that we should have political as well as practical difficulties. But I would ask the simple question—Who amongst us, or in this country, would have imagined that in this undertaking the political difficulties would exceed the practical? I think that where you would find one person to imagine that our great difficulty would proceed from political causes, you would find 100 to say that the practical difficulties were insurmountable. Now, thanks to the great ability, and intelligence and perseverance of your Chairman, and of the people who were working on the other side of the Channel, it would appear that the practical difficulties have been overcome, and that we are almost certain of being

able to carry out the work, and to carry it out at a very limited cost. Well, from what side do our political difficulties come? We might have expected rather that France would raise these difficulties. She has Germany on the other side, with whom it is possible, though we will say not probable, that she may one day be at war; and certainly if any danger were likely to accrue to any country it would be to France, from this connexion—this new connexion—between the two countries. But France is not the one to raise objections. France, on the part of her President, of M. Gambetta and of M. Thiers, speaks boldly, and she urges on this great work by every means in her power. It is not the workmen of England who object to this Channel Tunnel. The artizans of England do not fear that those of France will interfere with their labour. It is not even the women of England that fear an invasion on the part of France. (Hear, hear.) The difficulty, strange to say, proceeds from a certain section of our military authorities, headed—which seems most curious of all—by the Hero of Tel-el-Kebir. (Hear, hear.) This is a very curious fact. Certainly we cannot suppose that the Government of our country is really adverse to our undertaking. Such men as Mr. Gladstone, as Mr. Bright, as Lord Hartington, and Sir C. Dilke, are not men who would oppose the facilitating of communication with the sister country—France. But, gentlemen, if there is any source of danger to England, at least it can only come from one country, and that is France. Now, Italy has a natural barrier just as we have. Her natural barrier is the Alps. But Italy does not fear invasion from France or Germany. She seeks, by every means in her power, to facilitate communication with her neighbours. The Tunnels are there—the St. Gothard and the Mont Cenis Passes, to enable the people of the two countries to pass from one to the other. (Hear, hear.) England alone—if you except China—is the only country which raises objections to railway communication with her neighbours; and in this respect we are out-Chinaing the Chinese. I hope, gentlemen, that this difficulty may be overcome. (Cheers.) I shall not presume to argue on the military side of this question, but I would like to offer one or two practical suggestions. Our military authorities would have us believe that the French could mass a number of troops on the other side of the Channel without our knowing it (laughter)—that these troops would pass through the Tunnel and occupy our territory without our being able to prevent it. But I would ask our Chairman, and any engineer here, if, as long as we have command of the sea, it would not be possible to destroy this Tunnel, in case of need, from the sea? (Hear, hear.) Surely some means may be devised by which, if it were absolutely

necessary, either at low-water mark, or beyond that, if desirable, the Tunnel might be destroyed, and all danger, if there is really any danger, would thus be at an end. (Hear, hear.) Of course, precautions are good. But, gentlemen, the silver streak which we trust to has, I believe, its disadvantages as well as its advantages, and I will only refer to one of them—but it shall be a very great disadvantage. It is unquestionably a fact, which has been recognized in this country, that the education of our people is behind the education of our neighbours, especially in Germany and Switzerland. My belief is, that we may attribute our remaining behind in this instance very much to our insular position. (Hear, hear). We complain that Germans and Swiss come here to occupy the places in our factories and offices which our sons ought to occupy. Well, if we were more acquainted with the progress which has been made in foreign countries, we should be able to keep pace with them. (Hear, hear.) I believe, myself, that it is this insular position which, in the long run, if we maintain it, will constitute our greatest danger. (Cheers.) I will not now detain you longer. I will only say that it is my hope that those who have the direction and management of this Company will not lose heart, but will continue as they have done to urge forward the undertaking by every means in their power, and I feel certain that in doing so they will have the support of the great mass of the English people. (Continued cheers.)

The Chairman put the resolution, and it was passed unanimously.

The CHAIRMAN: Now, gentlemen, you will observe that the next business is the question of the election of Directors. Under the Articles of Association only one-third of the whole body of Directors go out of office; but, in the terms of the Report, it is in your power to replace the whole of them, or any of them, just as your discretion may lead you to determine. I must say that, although I believe, by the Articles of Association, my term of office has some definite period, I would rather be re-elected or rejected, as you may decide, with the rest of my colleagues. Therefore I shall propose the following resolution:—

> "That Sir Edward William Watkin, Bart., M.P.; the Rt. Hon. Lord Brabourne; the Rt. Hon. George Augustus Frederick Cavendish Bentinck, M.P.; the Rt. Hon. Lord Hothfield; William Mewburn, Esq.; Sir Philip Rose, Bart.; and Richard Withers, Esq., be re-elected Directors of this Company."

If there is any objection to this re-election, I hope the Shareholders will state it.

Mr. C. H. GAUSDEN: I beg leave to second the motion. I can only add that I hope such an expression of opinion will soon reach the Government, that they will agree to the carrying out of our undertaking. With respect to an observation which has been made about military objections to the scheme, I may say that it is very well understood that the military view is not unanimous, but that there is great division of opinion, and that the Engineers are in favour of the scheme. (Hear, hear.)

The Resolution was put to the Meeting, and passed unanimously.

The Chairman then moved—

> "That Bertram Fulke Hartshorne, Esq., and John James Mellor, Esq., be appointed Auditors of the Company, and that the remuneration be £25 each per annum."

The Resolution was seconded by John Jarvis, Esq., and passed *nem. con.*

The CHAIRMAN: Then, gentlemen, in consequence of what I stated as to the necessity of waiting to know whether the Government and Parliament intend to support the Channel Tunnel, I suggest to you that we adjourn this Meeting till Thursday, the 22nd February, at 12 o'clock at noon, at this place. My object is this—the moment Parliament meets, if we do not learn it before, we must know what the Government intend to do. Then, when we know what the Government intend, we are in a position to act either in one direction or the other. Therefore I now move:—

> "That this Meeting, at its rising, do stand adjourned to Thursday, the 22nd February, at noon."

Mr. BYNG: I beg leave to second that Resolution. I am not a Director of the Tunnel Company, but I represent a very large interest in it as a trustee for the South Eastern Company. I am very much pleased to hear the observations that have been made to-day by the Chairman, and also by Mr. Cazalet. But I do not in the least despair of the success of the Tunnel. I believe that, although there has been a little scare, or rather misunderstanding, and the press has rather hastily taken it up—I believe that all the great men, like the Duke of Cambridge and Sir Garnet Wolseley, will after all see the propriety of giving way on this question, and that we shall yet obtain from Parliament a happy solution of the difficulties we have to incur. (Applause.) I have no more to say on the subject, but I am full of good heart about it, and I hope that at our next Meeting we shall look very cheerfully in one another's faces.

The CHAIRMAN: In putting this Resolution I should just like to say a word with reference to the very excellent observations of Mr.

Cazalet, a gentleman who knows how to give a whole argument in a phrase. He is a very happy speaker, and I wish I could speak as well. What I wish to say is, that we do not want to do away with the "silver streak" at all, but to supplement it with a golden band. (Cheers.) Our Tunnel is the golden band connecting England and France, I hope for ever, happily together. (Loud cheers.)

The Resolution was passed unanimously.

The CHAIRMAN: Now we come to the business of the Special Meeting, which is connected simply with what is called the Wharncliffe Order, and the approval of the Bill introduced in reference to the Channel Tunnel. Any gentleman who looks at those cartoons hung on the wall will see that there are three lines. There is the old idea of Hawkshaw and others, to go from a place that you see indicated by the black line, right across to St. Margaret's Bay. The effect of that would be to be sometimes in the grey chalk, and sometimes out of it. It is very much like the old joke about the revolving light at Liverpool, of which it was said that "sometimes you see it, sometimes you don't." (Laughter.) Well, this is absolutely abandoned, showing clearly that these gentlemen, who were solemnly warned by Mr. Brady and myself that they were totally wrong, are trying to retreat from their false position. Then, the red line you see there begins at Sangatte, and goes by a junction with the Northern of France Railway and across the Channel in two curved lines. The object of that is, of course, to keep entirely in the grey chalk. Well, the scheme of Lord R. Grosvenor and his friends, who proposed that other line originally, is to come out of the red line at a point you see there, and go to a place called Fan Hole. Then they propose to go from Fan Hole right through into the Chatham and Dover Railway; and if there are any South Eastern Shareholders present, they will be pleased to note from me that the late Engineer of the South Eastern, Sir John Hawkshaw, is projecting a Tunnel Railway, which will entirely exclude the South Eastern from any connection with the Tunnel. (Hear, hear.) Now, the Bill which has been promoted by the South Eastern, with the support of the Tunnel Company, is to connect that line which goes through the grey chalk, with the South Eastern on one side and the Chatham and Dover on the other. The military authorities who reported on this question, reported that the Tunnel ought to debouch, as they call it, inland, and not in the sea. It is quite clear, therefore, that these gentlemen assume that, some time or other, England would lose the control of the Channel. That is an

assumption that I never will entertain. (Hear.) But still, though I think it is a gross mistake, and I think the proper place for the *embouchure* of the Tunnel would have been where it could be defended from the sea; and I proposed a scheme of fortification at the mouth of the Tunnel, which, I think, was not a very bad suggestion:—yet the scheme which Mr. Brady and our engineers have laid out is intended to bring the mouth of the Tunnel inland, and therefore, to comply as far as we can with what we understand to be the views of these great authorities. The Resolution which I have to move is:—

> "That a Bill introduced in the present session of Parliament entitled 'A Bill empowering the South Eastern Railway Company and the Submarine Continental Railway Company, Limited, to provide improved communication between England and the Continent of Europe, by means of Railways and a Tunnel beneath the Straits of Dover, and for other purposes,' be and is hereby approved."

That is a Resolution which it is necessary to pass under the Wharncliffe Order.

Lord HOTHFIELD seconded the Motion, and it was passed unanimously.

The business of the Meeting being concluded,

Mr. CHARLES SCHIFF proposed a Vote of Thanks to the Chairman for the clearness and ability with which he had laid the affairs of the Company before the Shareholders.

Alderman HADLEY seconded the Motion, and wished to thank Sir Edward Watkin for the energy with which he had prosecuted the undertaking.

The Motion having been passed with applause,

The CHAIRMAN said: My colleagues and I are much indebted to you, Gentlemen, for your confidence. I need not say that we shall do our very best to deserve it. (Cheers.)

THE CHANNEL TUNNEL.

LORD LANSDOWNE'S REPORT

PRESENTED TO THE

SELECT COMMITTEE

OF THE

House of Lords and House of Commons,

On 10th JULY, 1883.

London:

PRINTED BY C. F. ROWORTH, 5—11, GREAT NEW STREET,
FETTER LANE, E.C.

Select Committee on the Channel Tunnel.

TUESDAY, JULY 10, 1883.

MARQUESS OF LANSDOWNE, in the Chair.

EARL OF DEVON.	SIR HENRY HUSSEY VIVIAN.
EARL OF CAMPERDOWN.	SIR MASSEY LOPES.
LORD ABERDARE.	MR. BAXTER.
LORD SHUTE.	MR. ARTHUR PEEL.

MR. HARCOURT.

DRAFT REPORT submitted by MARQUESS OF LANSDOWNE.

1. IN conducting the inquiry with which we have been entrusted, we have endeavoured to limit ourselves as strictly as possible to an investigation of the points which we believed to be specially referred to us.

2. We were directed to ascertain whether it was expedient that Parliamentary sanction should be given to a submarine communication between England and France, and to consider whether any or what conditions should be imposed by Parliament in the event of such communication being sanctioned. We do not believe that it is incumbent upon us to report upon the possibility of establishing such a communication, or upon the special engineering features of the schemes which have been lately before the public.

3. The possibility of forming a Tunnel under the Channel, as to which we gather that some diversity of opinion exists, could, we apprehend, only be demonstrated by the successful execution of the work.

4. There is, in our opinion, no reason for believing that the interests of this country would suffer if the attempt were to be made and were to result in a failure.

5. The inquiry, limited by these considerations, appears to resolve itself into two parts:

(1) A consideration of the commercial or other advantages which might accrue to this country from the establishment of submarine communication between it and the continent of Europe.

(2) An examination of the effects which the existence of such communication might have upon the national security.

We have taken a considerable amount of evidence bearing upon both points.

6. With regard to the former, we have endeavoured to ascertain the extent to which a Tunnel of the character contemplated by the projectors of the schemes now before the public, would suffice to carry a largely increased amount of traffic.

7. There is a wide discrepancy between the estimates which have been laid before us, as to the carrying capacity of a double line of railway, worked under the peculiar circumstances which will be present in the case of a Tunnel line.

8. It is obvious that in the case of a railway running through a Tunnel of the altogether unprecedented length of thirty miles,

approached by steep gradients at each end, and used for the purpose of carrying goods as well as passengers, extraordinary precautions would be called for; with regard to these we may express our belief that if the formation of the Tunnel were to be permitted, it would be found necessary to insist—

(1) That under no circumstances should more than one train be allowed to run at the same time over the five mile gradients at each end of the Tunnel.

(2) That there should be a sufficient number of block stations in the Tunnel, and that two of these should always be blocked at once.

(3) That a certain number of hours out of the twenty-four should be set apart for the examination and repair of the permanent way, and for the relief of the block signallers.

The details of these arrangements would, we apprehend, be fully considered and regulated from time to time by the Board of Trade.

9. The adoption of these precautions would necessarily impose certain limits upon the traffic which might be run through the Tunnel. That traffic might possibly be still further limited in the event of the ventilation of the Tunnel presenting difficulties greater than those foreseen by the promoters. This subject, which we regard as inseparably connected with that of the structure of the work, is not one which we consider to have been referred to us. We have, however, during the course of our inquiries, received several suggestions upon the question, and we may without impropriety point out that the Channel Tunnel will, if made, differ from all existing Tunnels in its great length, and in the fact that throughout the whole of that length it must necessarily be below the level of both its entrances.

10. Under these circumstances it can scarcely be doubted that the problem of providing adequate ventilation for the Tunnel will be one of some difficulty, and we do not doubt that before Parliamentary sanction is given to any scheme for submarine communication with France, special attention will be given to the appliances for securing persons using it from risk or inconvenience caused by a defective supply of respirable air.

11. The importance of the subject will be obvious when it is remembered, that if the Tunnel were constructed, and the expectations of the promoters in regard to its ventilation disappointed, this country might find itself in the position of having incurred certain liabilities (of which we shall speak presently) in connection with the defences of the exit of the Tunnel, without obtaining any, or at any rate adequate, compensation in increased facilities of communication.

12. The observations which we have to make upon the probable carrying capacity of the Channel Tunnel are founded upon the assumption that those difficulties which attend its effectual ventilation have been successfully overcome.

13. Subject to this reservation, the evidence leads us to believe that a Tunnel of the character of those now projected would be capable of accommodating a very large amount of passenger and goods traffic.

14. Thus Mr. Grierson, general manager of the Great Western Railway, expresses his belief that twelve passenger trains per week day and two on Sundays, and four goods trains per week day, carrying 2,316,000 passengers and 375,000 tons of goods per annum, could be run with safety through the Tunnel.

15. Mr. Oakley, general manager of the Great Northern Railway, considers that after setting apart a portion of the twenty-four hours for goods traffic, which would be conveyed at a slower rate, an average of four trains per hour might be maintained.

16. Major-General Hutchinson, one of the Railway Inspectors of the Board of Trade, states his opinion that:

Assuming the speed of passenger trains and goods trains to be respectively forty and twenty miles an hour, and the number of each to be about equal.

Assuming also that there are two block stations in the Tunnel, and that two sections are blocked to increase the safety of working, twenty-five trains might be passed through in each direction; or, making the necessary reduction for repairs and renewals of permanent way, about 1,500,000 of passengers and 400,000 tons of goods per annum.

General Hutchinson adds that, With speeds of forty-five and twenty-five miles an hour for passengers and goods trains respectively, the number of trains, under the same assumption as above as regards block stations, would be thirty-one, capable of conveying about 1,500,000 of passengers and 400,000 tons of goods, and about 1,750,000 of passengers and 500,000 tons of goods respectively per annum.

17. Colonel Yolland, the senior Railway Inspector of the Board of Trade, would set apart six hours out of the 24 for the maintenance of the permanent way, but states that in his opinion the Tunnel could be worked safely with three trains an hour, or from fifty-four to sixty trains in the eighteen hours.

18. The above estimates are, it will be observed, founded upon the assumption that two lines of rails only are laid in the Tunnel; it is, however, highly probable that if the traffic were to expand, a time would come when the number of lines would be increased, and the carrying capacity of the Tunnel proportionately augmented.

19. We have now to consider the extent to which, if railway communication were established between England and the Continent, the traffic between them would be affected.

20. We express with confidence our opinion that it would be reasonable to anticipate an immense development of the passenger traffic.

21. The number of persons now crossing the Channel is, if we bear in mind the extent to which the population of the British Islands is connected by business and other ties with that of the Continent of Europe, remarkably small. The total passenger traffic between England and the Continent during the year 1882 is represented by a total of 464,000 journeys between English ports and

Calais, Boulogne, and Havre, and 50,000 journeys between English and Belgian ports.

22. It is to be remembered that the population of the British Islands is, at the present time, between 35,000,000 and 36,000,000, and that of Belgium, Holland, Germany, and France about 92,000,000 ; while, if the population of the rest of Europe be added to that of the four countries named above, and the population of North America to that of the British Islands, a total of 100,000,000 upon one side of the English Channel and of 300,000,000 upon the other is the result. The fact that with such a population some 250,000 persons only should cross the Channel (for most of the travellers either way make two journeys), establishes, in our opinion, the conclusion that large numbers of persons, who would make the journey for business or pleasure, are deterred from so doing by the inconveniences of the present passage. These inconveniences have, no doubt, been diminished during recent years, with the result of steadily increasing the number of passages recorded.

23. Further improvements in the harbours, and in the vessels used, would, no doubt, lead to a further increase; but we are of opinion that any route depending upon a sea passage must continue to be to some extent affected by those accidents of wind and weather which at present render the passage of the Channel so distasteful to travellers, and which account for the remarkable fluctuations in the number of persons crossing it from time to time.

24. The shortening of the journey between England and the Continent, which would result from the substitution of a train for a packet service between Dover and Calais, would also operate in the direction of increasing the number of passengers. The fact that a large section of the travelling public at present prefer the shorter and much more expensive route by way of Folkestone and Boulogne or Dover and Calais, to the slightly longer but much cheaper journey by way of Newhaven and Dieppe or Southampton and Havre, shows that travellers are, as a rule, disposed to give the preference to the most convenient rather than to the cheapest route.

25. The amount of the expansion of passenger traffic which might be expected is obviously a matter of pure conjecture. We observe, however, that the witnesses whom we have examined, including several of the most eminent of our railway managers, are unanimous in expressing their belief that it would be very large indeed.

26. Mr. Grierson, the general manager of the Great Western Railway, believes that the present number might be doubled in five or seven years, and trebled in fifteen.

27. Mr. Oakley, of the Great Northern Railway, anticipates that it would be trebled in a year and a half and would continue to expand.

28. The majority of the witnesses representing commercial in-

terests are confident that the Tunnel would be used to an immense extent by persons travelling to and from the Continent on business.

29. We take this opportunity of referring to a scheme submitted to us by Mr. J. Fowler, C.E., for the introduction of a system of steam ferries, by means of which whole trains might be conveyed across the Channel, and thus transferred from English to Continental railway lines and *vice versâ*.

30. It is claimed by Mr. Fowler for his scheme that it would secure for the public the same advantages, in the way of through communication, as those to be obtained by means of a Tunnel route; that its adoption presents none of the difficulties which present themselves in the way of the latter; that the expense which it would involve would be materially less; and that by depending upon it in preference to a Tunnel, all possibility of additional risk to the country would be avoided.

31. We are unable to express an opinion upon these alleged points of superiority without a special investigation of Mr. Fowler's project. No proposals founded upon it are at present before Parliament, and we do not consider that the fact of such a project having been in Mr. Fowler's contemplation would be of itself sufficient to warrant us in reporting adversely upon the proposal which we have been specially directed to examine.

32. We proceed to consider the effect which the opening of a Channel Tunnel might be expected to produce upon the commerce of this country.

33. With regard to this, we may observe that there is no difference of opinion as to the inconvenience of the existing route for goods traffic. The uncertainty which is inevitable in the case of communications liable to be affected by wind and weather, and interrupted by transfers from the railway truck to the steamer and the steamer to the railway, the delay, expense, and risk involved in transhipment at the ports of embarcation and disembarcation, and the cost of insurance, have all constituted serious hindrances to our international commerce.

34. The trade in certain classes of goods is especially liable to be affected by these causes. Of these the principal are:—

(1) Perishable commodities, such as fruit, fish, flowers, vegetables, and other food supplies.
(2) Fragile articles, such as pottery, the lighter sorts of machinery, and the more delicate textile fabrics.
(3) All small articles requiring careful packing, and of which the value is great in proportion to their bulk.

35. That the Tunnel, if made, would be largely used by goods of these classes we do not doubt.

36. We may refer in support of this anticipation to the evidence of Mr. Slagg, M.P., of Mr. Oakley, who has furnished us with an interesting enumeration of the commodities for the conveyance of which the Tunnel route would probably be used, of Mr. Samuelson,

who has described the adverse effects of the existing arrangements upon the trade in agricultural machinery, of Sir Jacob Behrens and Mr. Lee, who have given evidence in favour of the Tunnel in the interest of our textile manufactures, and of Mr. Wedgewood, who has pointed out the large saving which would result to the pottery trade by the substitution of through carriage in trucks for conveyance partly by rail and partly by sea to the Continent.

37. There is, however, a large traffic in commodities not falling within these descriptions, which is, nevertheless, carried on under disadvantageous conditions from the causes to which we have referred.

38. In modern commerce, speed and certainty are, as Sir Jacob Behrens has pointed out to us, not less essential than cheapness in cost. The following extract is from his evidence as to the trade in woollen fabrics:—

4513. Sir MASSEY LOPES.] I understand that the whole of your evidence in favour of the Tunnel really depends upon this: that it is a question of rates? —More of speed than of rates, and certainty of delivery. That is the greatest advantage that I expect from it.

4514. I understood you to say just now that unless you had some security that the rates were not increased for your manufactures as between Bradford and the different towns on the Continent, you would be adverse to the Tunnel? —I should not advocate it.

4515. So that really it is a question of rates?—Yes, but, as I have already said, it is more a question of speed than of rates.

4516. But still one of your conditions is the rates?—Yes; but it is the secondary one; it is not the highest.

39. We have no reason to doubt the statement made to us by several witnesses to the effect that of recent years it has become unusual for retail traders to retain large stocks, and that the system of ordering commodities as they are required in small quantities at a time from the manufacturers is in consequence of the keenness of commercial competition becoming habitual among the merchants both of this and of other countries.

40. To a trade carried on under these conditions the punctual and rapid execution of orders is all important.

41. We do not doubt that the delay and irregularity inseparable from carriage by sea in its present condition have operated to the serious disadvantage of English manufacturers and exporters, and that the substitution for the present route of one more rapid, more punctual, and attended by fewer risks and inconveniences, would occasion a large expansion of our trade, and enable it to compete with that of foreign countries under infinitely more favourable conditions.

42. These considerations would, we believe, affect not only those special branches of commerce to which we have referred already, but also the trade in other articles for which, from their cheapness and bulk, carriage by water would naturally present superior attractions.

43. The extent to which this will be the case must remain a matter of conjecture. There are many classes of goods for which it may fairly be presumed that conveyance by sea will always be preferred; where rapid delivery is not an object, where the goods conveyed are not liable to deterioration in transit, the sea route, so long as it remains the cheapest, must continue to hold its own.

44. It is, however, a remarkable fact, that for some time past, both in the Continent of Europe and in America, carriage by rail has competed successfully with carriage by water in cases where both were available, and there is no reason why such competition should not take place in the present instance.

45. The extent to which it will be possible for the Tunnel route to compete with the different sea routes across the Channel, must, of course, depend upon the rates at which goods are conveyed over the former, and these charges again must form the subject of future adjustment. The evidence, however, which we have received has satisfied us that even if they were apparently higher than those for conveyance by sea, it would frequently be to the advantage of exporters to submit to them, and to avoid the delays, risks, and expenses incidental to a sea voyage.

46. We may, before leaving the subject of rates, observe that the existence of alternative routes by sea will, in all probability, have the effect of keeping within reasonable limits the charges made for conveyance by the Tunnel route.

47. We cannot doubt that the Tunnel, once opened, would not only afford a profitable and expeditious route for the conveyance of a portion of the goods traffic already in existence, but would lead to a large expansion of the trade between this country and the Continent. We share the belief expressed, almost unanimously, by the witnesses who have appeared before us as representatives of various commercial interests in this country, that the introduction of improved facilities for communication between one country, or one district, and another, has invariably led, if not to the creation of new trades and new industries, at all events to a development, often far in excess of the most sanguine expectations, of those already in existence.

48. Such an expansion of trade has followed from the introduction of through rates, and from the removal of interruptions of gauge in this country, and from the establishment of improved communication and the overcoming of physical obstacles on the Continent of Europe and in America; and we have no reason to doubt that it would follow, if the disadvantages occasioned to international commerce by the existence of the English Channel were to be successfully removed.

49. From such a development of the trade between the United Kingdom and the Continent this country would, it can scarcely be doubted, be the greatest gainer.

50. Owing to the peculiar position which it occupies in the commercial system of the world, it has, we believe, more to gain than any other nation by an improvement of its trade routes, and more to lose by the neglect of any opportunities which may present themselves for their improvement. The greatest distributor of commodities in the world, it is, above all nations, interested in the improvement of those channels through which that distribution is effected. This consideration is entitled to the greater weight, because the enterprise of our Continental competitors has, by the improvement of Continental harbours and the facilitation of through traffic in goods throughout the Continent, already been successful in threatening our supremacy in the *entrepôt* trade. We desire to express our belief that not the least material of the arguments in favour of the establishment of submarine communication is to be found in the fact that it would probably tend to retain for us a large amount of business which recent changes upon the Continent are already tending, and may still further tend, to divert from our ports.

51. The volume of the trade which would be likely to make use of the Channel Tunnel, were that route opened for the conveyance of goods at rates sufficiently advantageous to induce exporters and importers to make use of it, must, as we have already pointed out, remain a matter for conjecture. It is, however, material to consider the total amount of the trade of which a portion might be attracted to the Tunnel, and to ascertain the value of those sections of it which are most likely to be so attracted.

52. We learn from tables which have been prepared for us under the direction of Mr. Giffen, in the Board of Trade, that of the total trade of the United Kingdom, imports to the value of £151,000,000 come to this country from the Continent of Europe, and exports to the value of £127,000,000 are carried from this country to the Continent. These exports and imports represent about two-fifths of the exports and two-fifths of imports of the United Kingdom to and from the whole world.

53. It is to be observed that, of the above exports, £81,000,000 are British and Irish products (about one-third of the British and Irish products exported from the United Kingdom); while the foreign and colonial produce re-exported from this country to the Continent is valued at £46,000,000, or three-fourths of the total amount of foreign and colonial produce distributed by this country. In addition to the distribution of produce to this amount, it is necessary to take into consideration the business spoken of specially as that of trans-shipment, which amounts to about £12,500,000 a year, of which £9,500,000, or more than three-fourths, is received from the Continent; while £2,800,000, or about one-fourth, represents commodities sent, after trans-shipment, to the Continent. Besides these, there is a large but fluctuating trade with the Continent in bullion, and a large traffic in securities. The total of our transactions with the Continent, including imports, exports, trans-

shipment, and bullion, amount, in round numbers, to £300,000,000, or £150,000,000 each way.

54. From other tables which have been put in by Mr. Giffen, in illustration of the movements of shipping, it appears that in 1882 the entries of shipping in the various ports of the United Kingdom, from Europe, amounted to 20,000,000 tons, or nearly three-fourths of the total entries from all countries; and the clearances to 18,500,000 tons, or nearly two-thirds of the total clearances to all countries.

55. A fair idea of the total amount of the trade liable to be affected cannot, however, be formed, unless to the figures quoted above be added those representing the trade of the United States and Canada with Europe, excluding the United Kingdom. With regard to this, Mr. Giffen estimates the amount of the imports into the United States from Europe, excluding England, at £32,000,000, and the exports from the United States to Europe, excluding England, at £52,000,000. Adding to these amounts the trade between the United States and Europe in bullion, the total for the year 1881 of the trade between North America and the Continent of Europe may be taken at £100,000,000.

56. The total trade between the Continent of Europe on the one hand, and the United Kingdom and North America on the other, may therefore be set down at £400,000,000 annually, or £220,000,000 each way.

57. With reference to the prospects of the Channel Tunnel, it is important to distinguish the amount of the trade referred to above which belongs to those countries of Western Europe, the commerce of which would be most likely to take advantage of improved communications between England and the Continent. We find accordingly that, of the total of our imports from the whole of Europe, two-thirds, or £98,000,000, were from Germany, Holland, Belgium, and France; while, of our total exports to all Europe, two-thirds, or £88,000,000, were to these four countries. Of these exports, £50,000,000 were of domestic produce, or five-eighths of our exports of such produce to all Europe, while £38,000,000 were of foreign and colonial produce, or four-fifths of our exports of foreign and colonial produce to all Europe. Of our distributing trade, by far the greater portion is therefore carried on with our nearest Continental neighbours, with whom also we transact a trans-shipment business represented by £8,000,000 out of £9,500,000 worth of goods imported for trans-shipment from all Europe; and of exports valued at £2,000,000 out of £2,800,000 exported after trans-shipment to the whole of Europe.

58. Of the bullion trade nearly the whole imports and the great bulk of the exports are from and to these countries, with which our total annual trade, including imports, exports, trans-shipment trade, and bullion, amount in round numbers to £200,000,000, or £100,000,000 each way, out of £300,000,000, or £150,000,000 each way, our total trade with all Europe.

59. Of the trade between the Continent of Europe and the United States, nearly the whole belongs to these four countries, the total trade of which with the United Kingdom and the United States may, Mr. Giffen considers, be taken at £300,000,000 or £150,000,000 each way, exclusive of traffic in securities and passengers.

60. The shipping statistics relating to the trade between the United Kingdom and the same group of European countries show that about four-sevenths of the total tonnage, including entrances and clearances to and from all Europe, belong to Germany, Holland, Belgium, and France. A table printed in the Appendix to this Report illustrates the rapid expansion which has been undergone by our trade with these countries during the last twenty years.

61. The above figures establish conclusively,—

(i) That the volume of the traffic at present passing across the seas which separate the British Islands from the Continent of Europe, and consequently liable to be affected by the existence of a Channel Tunnel, is enormous.

(ii) That a very large proportion of that traffic is between the United Kingdom and those four countries (Germany, Holland, France, and Belgium), our trade with which would presumably be most liable to be so affected.

62. In the face of these facts it may be predicted with confidence that any improvement in the routes followed by so vast a body of trade cannot fail to have far-reaching results in the development of existing traffic, and in the creation of new.

63. This view is justified, not only by our knowledge that such an expansion invariably follows upon the improvement of trade communications, but by a consideration of the conditions under which, in the case of the Channel Tunnel, the new route would compete with those already in existence.

64. In this competition the Tunnel route would have the advantage which must always belong to through carriage by railway over carriage partly by land and partly by sea, with the inseparable inconveniences of trans-shipment, break of bulk and terminal expenses. Those advantages, however, which must in all cases be considerable, can never be so great as in a case in which, as in that now before us, the mixed route is one of which the sea portion is short and the railway portion long in proportion to the whole length of the distance traversed. In the case of a mixed route, where the converse is true, that is, where the longer portion is by sea, and the shorter by rail, the cheapness of the water carriage over the longer distance affords some compensation for the expense and inconvenience of trans-shipment, &c., at each end. Where, on the other hand, as in the case of the conveyance of goods from an inland manufacturing town in England to their destination on the Continent, of the total distance traversed only a small part is by sea, no such compensation is forthcoming. It follows that the removal of the necessity for trans-shipment, &c., is relatively far more advantageous in the latter than in the former case, and should, in the

latter case, have the effect of enabling the relieved route to compete upon favourable terms, not only with those routes with which it was able to compete successfully before, but with other routes extending over a much larger area.

65. The relief of the Channel route from the hindrances which, as we have said, operate so disadvantageously to the commerce which makes use of it, is likely to have this result.

66. In this view we have to take into account the extent of that traffic which Mr. Giffen appropriately describes as the "short ferry traffic" between England and the Continent, in the case of which, owing to the shortness of the distance between the English and the Continental ports, the expenses of trans-shipment and break of bulk are not compensated by cheap conveyance over a long mileage by sea.

67. The amount of this traffic is shown in tables which Mr. Giffen has prepared with the object of illustrating the trade between France, Germany, Belgium, and Holland on the one side, and the ports of London, Harwich, Rochester, Dover, Folkestone, Newhaven, Littlehampton, Southampton, and Weymouth.

68. We find that of the total imports to the United Kingdom from those countries, £72,500,000, or about three-quarters, are to these ports.

69. Of the total exports to the United Kingdom from these four countries, £48,500,000, or one-half, are from these ports. Of these exports, £16,000,000 represent British and Irish, and £32,500,000 foreign and colonial products, out of a total of £38,000,000 of foreign and colonial products exported to the four countries. The shipping movements of these ports with the four countries show entries to the extent of nearly 4,000,000 tons, and clearances to the extent of 3,000,000 tons.

70. The tables printed in the Appendix specify the different articles imported and exported at each of the ports in question.

71. Of the trade shown by the above figures as following the short ferry route across the Channel, there is every reason for expecting that a large share would pass through the Tunnel. In all cases except the comparatively insignificant number where the destination of the goods happened to be the seaport at which they were landed, two trans-shipments would be avoided, and, as we have already pointed out, the shortness of the present water transit offers no compensation for its expense and inconvenience. It is remarkable that of the wool now sent from London to France, about half is at present carried by rail from London to the Channel ports.

72. We desire to insist particularly upon the importance, in the interests of the large depôt trade carried on by this country, of neglecting no opportunity which may present itself for the improvement of our trade communications. The figures which we have given show how large a part of the foreign and colonial produce which we import is re-exported to Germany, Holland, Belgium, and

France, and that of this a large part follows the short sea route. The evidence which we have received shows that this trade is threatened by the increase of business at places like Antwerp, Havre, and Rotterdam, which are able to receive and distribute directly goods destined to the Continent. The fact that the chief manufacturing places on the Continent with which our business in the distribution of raw material is carried on are situated inland, would render it possible for direct railway carriage from this country to compete under favourable conditions with railway carriage between the same places and the Continental ports.

73. We are led at this point to the consideration of the effects which the opening of a Tunnel under the English Channel might produce upon our security as a nation.

74. Our examination of this part of the subject has been much facilitated by a study of the memoranda and evidence printed in the Blue Book, entitled "Correspondence with reference to the proposed Construction of a Channel Tunnel." Among these papers we may refer specially to the Report of the Military Committee presided over by Sir A. Alison, and to the minutes of His Royal Highness the Commander-in-Chief, and of Lord Wolseley.

75. These papers contain a very full statement of the military arguments. We have, however, thought it desirable to afford the writers an opportunity of further explaining their views, and of submitting themselves to examination with regard to the data upon which they had founded their conclusions, and we have supplemented their evidence by that of other distinguished officers.

76. We share with the military witnesses their opinion that the existence of a Tunnel under the Channel would in some respects modify the conditions under which the defence of this country would have to be undertaken, and that special precautions would be necessary in order to prevent the possibility of its falling into the hands of an enemy. We agree with them in believing that its possession, either during the progress of operations or during an occupation of English soil, would be highly advantageous to the invading force, and possibly disastrous to the invaded nation. Such a force holding both ends of the Tunnel would have a secure line of communications by means of which it could be safely and easily provided with supplies and reinforcements; these, without a Tunnel, could be conveyed by sea only, subject to all the risks of transport across the Channel and attack from the English navy.

77. We are, therefore, ready to concede that if it can be shown that no means could be devised upon which reliance could be placed for preventing a Tunnel once made from passing into the hands of an enemy, its formation would be in the highest degree objectionable.

78. We have, therefore, to consider whether the capture of the Tunnel by an enemy is a contingency so probable as to justify us in recommending that its construction be forbidden by Parliament.

79. We avail ourselves of this opportunity for expressing the reluctance which, as civilians, we feel to express our own opinions, and especially to criticise those of high military authorities, in regard to matters affecting the defences of the country. We cannot, however, divest ourselves of the responsibility which Parliament has thrown upon us in entrusting us with this inquiry. It is, moreover, our duty to point out, and upon this we shall have more to say presently, that of the considerations on which those military authorities have relied in arriving at their conclusions, many are far from being of an exclusively technical or military character. Some of them, indeed, are purely political, and upon these, at any rate, we conceive that we need have no scruple in expressing the opinions which we have been able to form. In other cases, again, the statements originally put forward have been so far qualified or limited by the subsequent evidence of the witness as to deprive them of much of their significance and weight.

80. We have already admitted that the existence of the Tunnel would to some extent alter the conditions under which this country would have to be defended against attack. It follows, and, to the best of our belief, no one has disputed the conclusion, that steps must be taken with the object of removing the risk which, if no such steps were to be taken, the presence of the Tunnel would involve.

81. This question has been so thoroughly dealt with by the Military Committee, presided over by Sir A. Alison, to which its investigation was entrusted last year, that it is not necessary for us to do more than recapitulate the principal recommendations of their Report. The evidence which we have taken in connection with this branch of the inquiry leads us to believe that those recommendations are regarded by the military authorities as embodying the most effectual measures which military and engineering science is able to suggest for the purpose of securing the Tunnel.

82. We will therefore assume that in accordance with the suggestions of the Committee, arrangements have been made:

(1) For protecting the mouth of the Tunnel by means of a portcullis or other defensible barrier.

We desire to invite attention to the suggestion made by Sir F. Bramwell for the defence of the terminal station at the English end of the tunnel by means of massive sliding gates connected by interlocking machinery, the machinery to be so arranged that both gates could never be opened at the same time.

(2) For interrupting the ventilation of the Tunnel, and t[illegible]by rendering its air irrespirable.

(3) For closing the land portion of the Tunnel by pouring into it at one or more places specially provide purpose.

(4) For the temporary demolition of the land port Tunnel by mines, or by fixing charges of expl

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(4) For the temporary demolition of the land port Tunnel by mines, or by fixing charges of expl

(5) For partially flooding the Tunnel by opening of sluice valves or by the use of explosives.

(6) For the complete destruction of the Tunnel by the admission of the sea.

With regard to the last, we observe that several of the witnesses whom we have examined have expressed themselves incredulous as to the possibility of effecting such a breach in the roof or walls of the Tunnel as would have the effect of permanently disabling it. We have, however, ascertained that the members of the Military Committee thoroughly considered this question, and we have obtained from Sir F. Abel and Colonel Majendie, the two members of the Committee who were specially consulted upon these points, a clear expression of their opinion that by the use of explosives the Tunnel might be disabled to such an extent that its restoration would be an operation not less serious than the construction of a new Tunnel.

83. We further assume that, in accordance with the recommendations of the Military Committee, the Tunnel has been made to emerge in the immediate vicinity of a suitable fortress, and that the arrangements to be used for its obstruction are to be controlled from different points situated within the works of that fortress, as well as from other points at a distance from it.

84. The character and extent of the additions which would be requisite in order to bring the works now in existence at Dover up to the strength necessary under the altered circumstances which would be present, are matters upon which we cannot undertake to report in detail. These must be determined upon the responsibility of Her Majesty's Government, aided by their professional advisers. His Royal Highness the Commander-in-Chief has pointed out to us that it would be impossible for these to give an opinion until the precise position of the Tunnel and its exit has been determined.

85. We observe that upon these points, and particularly with regard to the strength of the garrison which would be necessary, there is some discrepancy in the opinions of the military witnesses.

86. Thus His Royal Highness the Commander-in-Chief states that the force at Dover should always be of a minimum strength of from 8,000 to 10,000 men.

87. Sir A. Clarke, Inspector-General of Fortifications, would wish the peace garrison of Dover, which now numbers about 3,000 men, to be increased to 6,000, but adds that he considers that increase desirable, "Tunnel or no Tunnel." This witness considers that a redistribution of troops would provide the extra 3,000 necessary.

88. Sir Lintorn Simmons believes that an extra garrison of 10,000 men would be required.

89. General Lord Wolseley is of opinion that the present garrison should be raised to a strength of from 10,000 to 12,000 men.

90. We understand that the accommodation now in existence at

Dover is sufficient for 3,000, and that in time of war a force of from 6,000 to 8,000 men would probably be placed within the works.

91. With regard to the possibility of strengthening the Dover force upon an emergency, we may mention that the distances by rail between Dover and other places where troops are, are the following:—

		Miles.	*ch.*
Dover to	Canterbury	16	34
,,	Chatham	43	75
,,	Woolwich	67	42
,,	London	76	46
,,	Shorncliffe	7	27
,,	Aldershot	95	22

92. We have now to examine *seriatim* the principal apprehensions for the safety of the Tunnel which have been expressed before us. These are to the effect that it might pass into the hands of an enemy—

(1) By surprise, effected through the Tunnel itself;
(2) By surprise, effected by a force landed in the neighbourhood of the Tunnel, with or without the aid of troops passed through the Tunnel;
(3) By surprise, facilitated by treachery;
(4) After investment by an invading force;
(5) By cession as the condition of the disastrous peace.

93. We desire to call especial attention to the fact that it is assumed, and notably by Lord Wolseley in his published Memorandum, that the danger to be apprehended from a *coup de main* of the kind suggested in (1), (2), and (3), would be greatest at a time when this country was in a state of profound peace with all the world, including the Power by which the supposed *coup de main* might be struck. "The seizing of the Tunnel by a *coup de main* is, in my opinion," says his lordship, "a very simple operation, *provided it be done without any previous warning or intimation whatever* by those who wish to invade the country." Speaking of the risk of surprise from a force sent through the Tunnel, the same writer (Mem. p. 282) says: "My contention is, that were a Tunnel made, England, as a nation could be destroyed *without any warning whatever, when Europe was in a condition of profound peace* . . . . . the whole plan is based upon the assumption of its being carried out *during a time of profound peace between the two nations*, and whilst we were enjoying life in the security and unsuspicion of a fool's paradise."

94. We gather from Lord Wolseley's evidence before this Committee, that it is far from his lordship's intention to suggest by the above expression that there is a greater probability of this country being treacherously attacked during a time of the profoundest peace, than at a moment when our foreign relations might be such as to require more than ordinary vigilance. It is, however, undoubtedly the opinion of Lord Wolseley, and of others who have addressed

themselves to the study of this question, that a treacherous attack directed against us by an apparently friendly power, at a moment when all the political circumstances were such as to disarm the suspicions of the political and military authorities, is the particular form of danger which it is, most of all, our duty to anticipate, as one of the results of the opening of a submarine route between England and the Continent.

95. In support of this view a paper, with which we have been supplied, has been prepared by the direction of His Royal Highness the Commander-in-Chief in the Intelligence Branch of the War Department. That paper has for its title "Hostilities without Declaration of War," and the writer has undertaken to show by a review of over a hundred cases, selected from the history of this and the last century, that hostilities between European Powers have, with rare exceptions, commenced without previous declarations of war. That this has been the case, in so far as hostile acts have been committed by land or by sea without the formal announcement that peaceful relations were to be considered at an end, we do not doubt. There is, however, a wide distinction between acts of hostility committed without a formal declaration of war, and such acts committed under circumstances rendering it impossible for the Power attacked to foresee the danger which threatened it. An examination of the Paper referred to will show that in the large majority of the cases referred to in the Paper of the Intelligence Department, hostilities, though not preceded by formal warning addressed to the Power against which they are directed, nevertheless took place at times when, owing to international complications, the continuance of a state of peace could not have been expected. The cases selected by Lord Wolseley for the purpose of illustrating his argument do not appear to bear it out. These were :—1st. The seizure in 1807 of the Danish Fleet at Copenhagen; 2nd. The capture in 1804 of four Spanish frigates; 3rd. The sudden and unexpected outbreak in 1870 of the Franco-German War.

1st. The Danish Fleet was, it is true, seized without a previous Declaration of War; a proceeding due to and justified by the discovery by the English Government of the Secret Article in the Treaty of Tilsit, by which the Navy of Denmark had been put at the disposal of France; an act, which, it is needless to say, constituted an alliance with our enemies, and which the Danish King and Government must have known to be tantamount to a Declaration of War, with all its consequences, for which they ought to have been prepared.

2nd. The seizure of the Spanish frigates was made (in accordance with a practice which was frequent in the 18th century, and was supported by jurists of all countries) on the eve of a war with France, felt to be inevitable, and in which Spain, by her treaty engagements with France, would be necessarily involved; and was, in fact, the sequel of a long and angry diplomatic correspondence, during which Spain was making active preparations for a maritime war.

3rd. The Franco-German War broke out with unexpected rapidity, but not so suddenly that either party possessing a single weak point, like the Channel Tunnel, would not have had ample time to place all its defences in working order.

96. We do not take the view that the contingency of a *coup de main* struck by a Power with whom our relations had been friendly and unstrained, is one which we have any right, or which experience would justify us in placing amongst the foremost of the probabilities with which we have to deal. It is our impression, on the contrary, that, if such an attack were to be made, it would be preceded by circumstances which would have called for effectual precautions against surprise. We observe with pleasure that this view is that apparently entertained by His Royal Highness the Commander-in-Chief, and by Sir Lintorn Simmons.

97. We are glad to learn from the whole of the military witnesses who have come before us that, if such precautions were in existence, the risk of a successful surprise would be extremely remote. That this would be so, whether the attempt were made by means of a force sent through the Tunnel, or by one landed in its vicinity, there can be little doubt. A small body of men emerging from the mouth of the Tunnel in the face of the concentrated fire of the forts by which it would be commanded, and of the superior force by which it would unquestionably be encountered, if its arrival were expected, could scarcely escape annihilation.

98. Thus Lord Wolseley says that, if sufficient notice were to be given, "Fifty men at the entrance of the Tunnel can prevent an army of 100,000 men coming through it."

99. Sir A. Alison, referring to the probability of an attack through the Tunnel, says that he thinks such an attack "ought to be very easily met;" and adds, "if there was any alarm at all, or any strainedness of relations, the precautions to be taken to meet it are so very simple, that I am not inclined to fear it as much as I know many military men of great experience do."

100. Nor would a like attempt on the part of a moderate-sized force, suddenly landed in or near Dover, if such an attempt were foreseen by the defenders, probably be less unsuccessful.

101. Sir A. Alison, questioned upon the prospects with which such an attempt might be made, says, "It is only in time of peace that it could be done without a formal declaration of war, and when it is not expected."

102. Lord Wolseley, asked whether he had any apprehension as to the result of an attempt of the same kind, made at a time when we were at war, and when, consequently the force to whom the defence of Dover was committed would be in daily or hourly expectation of hostilities, replied that, "With a garrison at Dover of 10,000 or 12,000, commanded by a well-selected general, a surprise would be a very improbable event."

103. His Royal Highness the Commander-in-Chief, asked whether he would anticipate much danger from the Tunnel in time of actual war, replies, "I should think the danger from the Tunnel is before any war breaks out; that is the point where I consider there is the greatest risk."

104. The military evidence indeed points throughout to the conclusion that the risk from a *coup de main*, unless struck in time of the profoundest peace, would be scarcely appreciable. We have already expressed our opinion with regard to the probability of an attack of this kind being made under such political conditions. It is, however, desirable, before we leave this part of the subject, to examine the prospects with which a *coup de main* might be attempted, even upon the assumption that the attempt took place when we had no reason whatever for anticipating it, and when the political sky was absolutely clear.

105. If the *coup de main* were struck through the Tunnel the invaders would have to be entrained without attracting attention, and sent through the Tunnel without such a disturbance of the ordinary traffic, as might awaken suspicion on our side. They would have to debouch from the Tunnel in sufficient numbers, and with sufficient rapidity, to enable them to possess themselves at once, and simultaneously, of the different works commanding the exit of the Tunnel. They would have to hold the exit and these works against any attempt which might be made to recapture them. Finally, unless we are to assume the failure of the whole of the arrangements suggested for closing the Tunnel in case of need, they would have to possess themselves at once of all the points from which those arrangements would be controlled, at the risk of finding the Tunnel obstructed in their rear, and their retreat hopelessly cut off before reinforcements or supplies could possibly reach them.

106. This being so, we are not surprised to learn from his Royal Highness the Commander-in-Chief that in his opinion if there is any risk from a *coup de main* "it is seaward that there is the danger; not the Tunnel as a means of attack."

107. With regard to the possibility of seizing the English end of the Tunnel by means of a small force landed in its neighbourhood, we have endeavoured to ascertain precisely the conditions, of which the presence would be indispensable if such an attempt were to have any chance of success. Those conditions would, we understand, be the following:—

(1.) It would be necessary that the invading force should be despatched with absolute secrecy.

(2.) That it should cross the Channel unobserved and unmolested by our fleet.

(3.) That the state of the weather should offer no difficulties to the disembarcation.

(4.) That its landing should be effected without hindrance.

(5.) That it should advance without molestation from the point at which it might be landed to the works by which the exit of the Tunnel would be protected.

(6) That it should find the garrison in a state of absolute unpreparedness.

(7) That it should succeed in carrying by a simultaneous rush the whole of the various works surrounding the exit of the Tunnel.

(8) That this capture should be effected so rapidly as to render it impossible for the defenders of those works to have recourse to any of the means which would be in existence for the purpose of closing or destroying the Tunnel, *or*, that the whole of those means should simultaneously chance to be out of working order.

108. That every one of these conditions should be present at the same time it appears to us most improbable. We can well conceive that, with the rapid communications now available for the movement of troops by land or sea, a force such as that contemplated might be collected and despatched, and possibly reach our coasts without warning. That its landing, formation, and forward movement could altogether escape detection we can scarcely conceive. It would, we learn from Admiral Rice, take 12 hours, even under the most favourable conditions, and assuming the landing to be unresisted, to land 20,000 men, the force contemplated by Sir Lintorn Simmons. Such a force could not, however, in Admiral Rice's opinion, be landed without attracting attention. A smaller body could, of course, be landed with greater rapidity, but the diminution of its numbers would not increase its chance of success. A force of 1,000 men could, Sir Cooper Key informs us, be landed under favourable circumstances in an hour; "the larger the number of men," however, this witness adds, "the more the difficulties that would arise against the time, but I have no hesitation in saying, that if they were equipped for it, with boats properly prepared, and a good clear beach, they could land 10,000 men under ten hours."

109. That such a force, or one approaching to it in strength, should be able to traverse without detection or hindrance, the distance intervening between the point of landing and the exit of the Tunnel, which, unless the recommendations of the Military Committee are altogether disregarded, would be at a considerable distance from the shore, appears to us difficult to conceive; were it to be detected, and the alarm given, the complete surprise of the garrisons of the different forts would no longer be possible.

110. The apprehension of Lord Wolseley, is, however, not that the invading force should be landed on the coast to the east or the west of Dover; upon which we understand that the nearest points available for a landing are at a distance of several miles from the town, but that a force much smaller than that supposed by Sir L. Simmons, and probably numbering not more than 3,000, might arrive at night at Dover itself. The anticipated operations of such a force are graphically described by Lord Wolseley, in his evidence, from which the following extracts are taken. The landing might, his lordship supposes, have taken place at Dover Pier.

4946. What distance would the force have to traverse before it got to the works?—There are no works at Dover, distant from the quay, more than a mile and a-half or two miles; I never calculated the exact number of yards.

4947. At any rate that distance, which is probably something of that kind, would have to be traversed?—That distance would have to be traversed.

4948. And its course lies through the town of Dover?—Its course lies through all the various parts of the town of Dover.

4949. At this moment you suppose that a force so landed would first awaken the alarm of somebody or other at Dover?—If the surprise were properly carried out, I do not see how anybody is to know anything about its taking place; if it is carried out on a dark or a rainy night, I do not see how anybody is to know anything about it before you actually walk up to the barrack gate and ask the sentry to let you in.

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4951. You assume, not that the works are carried by what you have called a short siege, but a sudden rush?—By surprise. If you had to resort to a siege, and you had the means of blowing up the Tunnel, of course you could blow it up.

4952. With regard to the works, we civilians cannot tell what works might or might not be erected in order to protect the Tunnel, but at this moment there are works, are there not, upon either side of the town of Dover?—Yes, on either side of the valley.

4953. What is your idea; that a force landed in the way which you have suggested would carry the whole of those works, or only that it should devote itself entirely to the works upon one side of the valley?—I should think they ought to carry all the works.

4954. Fort Burgoyne on one side and the Citadel on the other?—Fort Burgoyne on one side, and the Citadel on the other, and the Western Heights. I forget the names of the various forts; there are about four principal works in Dover, as well as I remember.

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4963. Then no alarm would be given by the appearance of 6,000 or 7,000 men through the streets of Dover in the dead of the night?—I was talking of 3,000 men, but if you take it up to 6,000 men, they would not march in one column, but march in many different directions towards the defence works which they had to attack; and if proper precautions had been taken beforehand by the general or the commander who had to devise such a scheme for the surprise of the place, under those circumstances it would be utterly impossible for any alarm to be given to the garrisons of the different works about to be attacked. It is quite possible that people, for instance, the policeman, and the coastguardsmen on the quay, would be knocked down, very likely bayoneted, or made prisoners, and you may call that giving an alarm; or they might be perceived landing by a small number of people, and it is possible that on the route from the quay, or from the place of disembarcation, to the various points to be attacked, individuals might come out in the dead of the night for some reason, or they might look out of the windows and see the men marching past; but if proper precautions be taken, as they would be in case of a surprise being planned and devised by a man who knew his work, I think it would be impossible for any news to reach the different points about to be attacked.

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5233. I think you said that supposing anyone in this room were to go to the barrack gates, and to knock at the door, the door would at once be opened?—The wicket would be opened to you.

5234. Would it be the case if a person who went there had 100 men in his company?—The man inside would not know that he had them; he would never suspect 100 men being outside; but I would go further and say, even supposing that he would not open the barrack gates, the barrack gates are very easily knocked in.

5235. Are there any drawbridges there?—There are, but they are very seldom, if ever, drawn up in Dover.

5236. You said that if the Tunnel were in existence, it would be necessary

that the conditions of life in Dover should be altered; would that be one of the conditions which would be altered?—Yes.

5237. And the drawbridges would be up at night?—The drawbridges would be up at night, and nobody would be allowed to go in or out after a certain hour.

111. The following extracts from the evidence of Sir Patrick Macdougall show that the precautions which might be necessary in order to guard effectually against a nocturnal surprise, would be of the simplest character:—

5288. In the greater part of the evidence you have given, you have contemplated the case of sufficient notice having reached the defensive force to occupy the lines which you say command the mouth of the Tunnel, and even to bring up troops, but the most dangerous contingency that has been suggested is a sudden surprise before those operations could be effected; can you not conceive a sudden surprise of that kind before due notice could be given of the attack?—No, I cannot.

5289. It has been suggested that there might be nothing to prevent, even after the works considered necessary for the defence of the Tunnel had been completed, a small force landing in the dead of the night at the pier of Dover, and portions of that force reaching each of the fortresses simultaneously, and occupying each of them without material difficulty; can you conceive of that taking place?—No, I cannot conceive of its taking place unless there was no garrison in the port, or that they were asleep.

5290. At any time in the night, I presume, when no danger was immediately at hand, a large portion of the garrison would be asleep?—Yes.

5291. A certain portion would be on guard?—Yes.

5292. Now it has been supposed that a force, we will say of 1,000 men, would be despatched simultaneously to each of five or six fortresses, and would arrive at each fortress at the same time; that they would knock at the door, and be admitted, and would rush in and disarm the ten or twelve men who would be on guard; does that attempt appear to you to be a feasible one?—It might be feasible on the supposition that the drawbridges were down, and the wickets open, but not upon the supposition that the drawbridges were up.

5293. I presume if any summons came at night to the soldier on guard, he would endeavour to ascertain who it was; he would not open the door without some precaution?—Of course the supposition is, that the wicket is opened to admit a supposed friend, and then these people rush in; but that would be rendered impossible by the drawbridge being up, and if the drawbridge were up, 4,000 men could do nothing against a fort with a steep escarpment; they could not scale the walls.

5294. I presume that if Dover became, as it would become in the case of the Tunnel being made, a place of some importance, every possible precaution against a sudden rush of that sort would be taken?—I should suppose so.

5295. Can you conceive that those precautions might be made, not very expensive and perfectly certain of acting; precautions to prevent the fort being seized suddenly and without due notice, so as to rouse the garrison?—I do not think they could possibly surprise the fort if the drawbridge was up and the garrison within. I am supposing small garrisons, not a large division. I think garrisons of 500 men would be ample for these small detached forts. The forts now existing require larger garrisions in proportion to the small forts, but then they are constructed for a different purpose.

112. We desire to dwell in examining this part of the subject, not only upon the difficulties which the force by which a *coup de main* might be attempted would have to surmount before it could possess itself of the Tunnel and the protecting works, but also upon what appears to us to be the certainty, that even if it was successful in effecting its purpose to this extent, it would, under the arrangements advocated by the Military Committee, find the Tunnel disabled.

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113. Of the measures enumerated in the Report of the Military Committee which, as we have pointed out, would produce results ranging between a temporary destruction of the Tunnel and its permanent annihilation, some would, we cannot doubt, have been resorted to from the moment that it became evident that an attack of any kind was impending. Those selected would, if the attack did not promise to be formidable in the first instance, effect a stoppage, which could be easily removed when the danger had ceased to exist. The flooding of the lowest lying portions of the Tunnel, the closing of the barriers at its entrance, the discontinuance of the means for supplying it with respirable air, would be sufficient for this purpose. A more formidable attack might be at once followed by the destruction of the ventilating machinery, or by the demolition of a considerable part of the land portion of the Tunnel by means of explosives.

114. By these means the Tunnel would be rendered useless for a period, the length of which would vary according as one or other of the above measures might be resorted to, during which a small force, even if it should have succeeded in possessing itself of the exit, and perhaps of an outwork in the immediate neighbourhood, could scarcely hope to hold its own against the forces which would be brought against it by land, and which, unless the command of the Channel had passed out of our hands, a contingency which we shall discuss hereafter, would threaten its communications by sea.

115. Should this be the case, it would follow, first, that the Tunnel itself would no longer be available for the objects which *ex hypothesi* rendered its possession desirable to the invaders; and secondly, that the invaders would find themselves in a position so critical as to be almost desperate.

116. Sir A. Alison states that in such a case the invading force would be in a position of greatest danger; it would be thrown forward at the risk of total destruction; if it failed it would be absolutely lost; and Lord Wolseley adds that it would be unnecessary for it to bring supplies, for the reason that, if it failed, it would not want any.

117. With regard to this contingency we observe that the military witnesses, while prepared to admit that the consequences which would follow from the timely destruction of the Tunnel under the circumstances which we have supposed, are generally apprehensive that the Tunnel would either not be closed at all, or would be closed too late, owing—

(1.) To the failure of the mechanical contrivances for closing, or

(2.) To the reluctance of the authorities, civil or military, to incur the responsibility of such a step.

118. We are quite ready to admit the unwisdom of placing implicit reliance, where great national interests are at stake, upon the absolute efficiency of any human appliances, particularly if it should be the case that those appliances are specially liable to failure from their complication, or from the materials upon which they

depend. In this view we are able to express our concurrence in the paragraph with which the Military Committee have concluded their Report, and which, considering the terms in which they were entrusted with their inquiry, they could not with propriety have omitted.

119. We share the opinion of the Military Committee, that it is impossible to eliminate the risk of failure "in every imaginable contingency," but we believe none the less that it is possible, by the exercise of an amount of care which, judging from the importance attached by the military authorities to these questions, we cannot doubt would be exercised, and by the multiplication of those defensive arrangements upon which the security of the Tunnel would depend, so far to minimise any risks which its existence might occasion as to place the occurrence of an appreciable danger beyond the range of those probabilities for which it would be our duty to provide.

120. In connection with this part of the inquiry we have obtained valuable evidence from Sir Frederick Abel, and from Colonel Majendie, Her Majesty's Chief Inspectors of Explosives.

121. The evidence of the former of these witnesses is to the effect that there are several methods by which the Tunnel could be flooded or otherwise obstructed without difficulty; that it might, if desired, be permanently disabled; that "a very simple system of inspection," such as is now exercised at our submarine mining stations, could be easily organised, and would have the effect of "guarding with almost absolute certainty," against risk arising from the deterioration of the appliances made use of. Those appliances are, Sir Frederick Abel admits, no doubt individually fallible, but their sufficient multiplication would reduce the chance of failure to "a very remote contingency." His decided view is that if it was desirable to utterly destroy the Tunnel, nothing but very gross and culpable negligence upon the part of those entrusted with its defences would prevent its destruction from being carried out.

122. Colonel Majendie states that "there are any number of ways of obstructing" the Tunnel; "there is no difficulty about that; if you have warning, and you want simply to close the Tunnel, or temporarily to disable it, or to deny it to an enemy, there could be no difficulty in multiplying means which would be perfectly effectual. . . . . I have no anxiety at all about that." With regard to the possibility of its permanent destruction, he expresses his belief that with "full time, full warning, and full means," there would be no difficulty in destroying it in various ways. He points out that there would be some risk of the mechanical arrangements getting out of order; he is apprehensive that those arrangements might not always be maintained in a high state of efficiency, and he adds that "there is always a risk of failure even in a thing which you imagine at the moment is all right." In answer to a subsequent question upon the same point he observes—"I have always had very much before my mind the recommenda-

tion which our Committee made, that any means of destroying the Tunnel should be controlled not only from the central works of the fortress, but also from one or two distant places: and it is more with reference to those operations, when, if I may say so, the worst has come and the enemy are in possession of the Tunnel, and possibly of some of its defences, that then, when it is most necessary that the thing should act, I am somewhat apprehensive of failure." Such a failure would not, however, in Colonel Majendie's opinion, be irreparable so long as "we had control of the mine," and "access to the explosives," and if the defences of the Tunnel were sufficiently strong to guard against the possibility of sudden seizure, his fundamental anxiety disappears.

123. The evidence of these and other witnesses leads us to believe that by a multiplication of the arrangements for closing the Tunnel, by a proper selection of the places from which those arrangements would be controlled, and by the exercise of ordinary care in their maintenance and supervision, the risk of their failure might be reduced to such an extent as to justify us in assuming that such a failure would not, under any conceivable circumstances, be likely to occur.

124. The argument founded upon the assumed reluctance of the authorities, civil or military, to destroy or to interfere with a work so valuable as the Channel Tunnel, is one which we cannot admit to have the force attributed to it. It will be remembered that the means at their disposal would range from the mere closing of the mouth of the Tunnel by a temporary obstruction, up to its permanent destruction by the admission of the waters of the sea through an irreparable breach. The former of these precautions would suffice in the case of an attack by *coup de main;* we cannot believe that upon an emergency, believed by the military authorities to threaten the existence of the nation, it would not be resorted to. The latter could be reserved for the more serious contingency to which we shall presently refer.

125. With regard to the anticipation that the capture of the Tunnel might be facilitated by treachery, it is perhaps sufficient to observe that happily the records of this country afford little support for such a conjecture, and that if the existence of treachery be assumed, it would have to operate over an area so extensive as to render its success far from probable. The extent and number of the defences of the Tunnel would render the simultaneous betrayal of the whole difficult, even upon their assumption that their position and character had been previously made known to an enemy.

126. To sum up the results of this portion of our inquiry, we desire to state that the apprehensions which have been urged by most of the witnesses whose evidence we have had the advantage of hearing, appear to be founded upon the following assumptions:—

(1.) A willingness on the part of the Power in possession of the French end of the Tunnel to attack this country treacherously, at a moment when our international relations could afford no indication of the imminence of such an attack.

(2) The passage and advance of an invading force, under circumstances which would enable it to elude notice from the time of its despatch up to the moment of its arrival at the Dover works.

(3) The simultaneous seizure by surprise of the whole of those works.

(4) The success of this enterprise with such rapidity and completeness as to render it impossible for the defenders to put into operation any of the manifold appliances for the destruction or temporary disabling of the Tunnel.

(5) The neglect, on the part of the military authorities, of all the most obvious precautions for the safety of a place which, according to their own representation, would be of cardinal importance to the security of the nation.

(6) The inopportune interference of the political authorities in a matter concerning the defences of the country.

The presence of most of these conditions, regarded separately, appears to us highly improbable. That the whole of them should concur, we believe to be so nearly inconceivable as to justify us in dismissing from our minds any apprehensions founded upon such an hypothesis.

127. The foregoing considerations have had reference mainly to that particular form of danger which we understood, from the evidence of His Royal Highness the Commander-in-Chief and the Adjutant-General to be chiefly feared by the military authorities.

128. It is, however, necessary to refer to another contingency; the possibility of the Tunnel falling into the hands of an enemy after the reduction of its defences, or after their cession, consequent upon a reverse or a series of reverses sustained in any part of the world by our arms. We fully recognize that, considering the extent of the British Empire, the responsibilities which we have incurred in different parts of the globe, the degree in which we depend upon our naval superiority for the protection of our national interests, the recent growth of foreign navies, and the impossibility of foreseeing the political combinations which may hereafter arise, or the effects of the discoveries of modern science as applied to warfare, we should not be justified in excluding from our contemplation the consequences which might result to this country, were it to sustain an overwhelming disaster after it had been united by a submarine communication with the Continent of Europe.

129. We are further bound to admit that the conditions under which a victorious enemy would enter upon the occupation of this country, or might impose terms of peace upon her if defeated, would be highly favourable to him, and unfavourable to us, if he should be either in actual possession of both ends of the Tunnel, or able to exact from us the cession of the English end.

130. It has been urged that in such an event his communications would be easy and almost indestructible, his fleet, instead of being engaged in protecting his communications, and in guarding the

conveyance of his supplies and reinforcements, would be at liberty to blockade our ports and molest our commerce; that he would be able at any moment to pour into this country large bodies of troops; that our difficulty in dislodging him would, under such circumstances, be infinitely greater than it would be were he to establish himself on English soil without the advantages which he would derive from the presence of the Tunnel. These sinister possibilities would, it is argued on the one hand, afford greatly increased temptations to an intending invader, and would, upon the other, lead to the recurrence of panics, to commercial and international susceptibilities, and consequently to augmented expenditure upon military objects, and ultimately to the introduction into this country of military service under the conditions prevalent upon the Continent of Europe.

131. We have given our careful attention to these grave considerations, and we should regret extremely to present the appearance of passing lightly over them. We are, however, in the first place, unable to share the anticipation that a victorious enemy would, after lengthened operations, either against the fortress of Dover, or against our forces in any other part of the world, find the Tunnel still available for his use. Under such circumstances there would obviously be ample time for its destruction. "If it is a question of siege," says Lord Wolseley, "whether there are contrivances or not beforehand for the destruction of the Tunnel, the officer commanding the garrison would improvise such means as to destroy the Tunnel during the siege."

132. We cannot bring ourselves to believe that if our fate as a nation depended upon the accomplishment of this, our rulers would refuse to give the necessary orders, or our military authorities to give effect to them. If we are right, it follows that the conquerors would not, in the event which we have supposed, obtain, and could not expect to obtain, in consequence of the construction of the Channel Tunnel, any advantages such as those which it is imagined that they will derive from its existence. The realization of this will, we believe, go far to allay those fears, the recurrence of which has been so much apprehended by some of the witnesses.

133. We cannot, however, in reviewing this part of the argument against the construction of the Tunnel, abstain from pointing out that, if it be once granted that this country has sustained a reverse so overwhelming as to oblige her to submit to the terms of a peace dictated by a victorious enemy, the presence of the Tunnel, even if it were to remain intact, would not materially alter a position already assumed to be desperate.

134. It would, we conclude, be a condition precedent to such reverse, that we had entirely lost the control of the sea, and that our armies had sustained a crushing defeat. It might be fairly contended that, under such circumstances, the victors being absolute masters of the English Channel, would be able to bring across it, without hindrance, whatever supplies and reinforcements they might

need for the subjection of this country. There would indeed, were our case so desperate as it is assumed to be, be nothing to prevent a victorious enemy from exacting the cession of the whole of our fleet and of our dockyards, and the demolition of our national defences, except such as he might himself retain. Finally, amongst the conditions imposed, it is conceivable that one might be the construction of the Tunnel at our expense, and its cession to the invaders.

135. We have now, however imperfectly, reviewed the chief arguments to which we have had the advantage of listening in regard to the military aspects of this question. We have, in the earlier part of our report, expressed our conviction that the commercial advantages likely to result from the opening of a Tunnel under the Channel are likely to be very considerable, and may probably far exceed the most sanguine expectations formed with regard to them. We are of opinion that a great industrial enterprise, offering a prospect so encouraging, should not be arrested except for conclusive reasons. We have given our reasons for believing that in the case of this enterprise the reasons urged for arresting it are not conclusive. In order to show sufficient cause for interference on the part of the State under such circumstances, it is, in our opinion, not enough to prove that circumstances can be conceived under which the existence of a Channel Tunnel might involve a more or less remote risk to the country, or that it is impracticable to devise precautions upon which absolute reliance might be placed "in every imaginable contingency." This is, however, all that has been done in the present instance by the opponents of the Tunnel project. They have, with much ingenuity, assumed the presence of every condition favourable to the view which they entertain, and the absence of every condition unfavourable to it, but they have not been able to show that there is the slightest prospect of the simultaneous presence of the whole of those favourable conditions, and unless this be assumed the whole argument founded upon them falls to the ground.

136. Holding these opinions, we have no course open to us except to recommend that this enterprise should not be prohibited on merely political grounds, and that it be allowed to proceed, subject to the ordinary Parliamentary examination by Committees.

137. The conditions under which that sanction ought to be given can scarcely be defined with precision until the details of the project are before the public.

138. The settlement of the defences is one which, as we have pointed out, cannot be effected until a particular scheme has been approved, and the situation of the English end of the Tunnel finally determined. The extent and character of those defences, the alterations of the works now in existence at Dover, the addition of new works, should any prove necessary, the equipment of those works, the strength of the garrison to be maintained in them, the character of the appliances for closing the Tunnel or for destroying

it, the precautions necessary in consequence of the increased importance of the fortress, all these must be determined by the Government in concert with its military advisers.

139. We desire, however, to express our opinion that the exit of the Tunnel and its approaches should be placed under the exclusive control of the military authorities.

140. It was, we observe, laid down as indispensable in the letter of the Secretary of State for War to the President of the Military Committee, dated 23rd February, 1882, that the first charge and maintenance of all necessary works would have to be defrayed by the owners of the Tunnel. It seems to us that of the extra expense which may be occasioned to the nation by the necessary addition to the strength of the works at Dover, the proprietors of the Tunnel may fairly be required to bear a part; but without further evidence as to the total expenditure required, we cannot take upon ourselves to make a specific recommendation on this head.

141. We received during the course of our inquiry from gentlemen representing both the schemes at present in existence assurances of their readiness to contribute, within reasonable limits, to the erection of any new works which may be needed.

142. We apprehend that, in accordance with the usual practice, the rates which the proprietors will be allowed to charge will be regulated beforehand. We consider that these should be fixed upon a scale calculated to induce the proprietors to look for a profit to a largely extended business upon terms attractive to the public rather than to a more restricted one with higher charges.

143. Special arrangements by convention will be necessary in order to secure facilities for through communication and reasonable through rates over other lines in connection with the Tunnel on this and on the other side of the Channel.

LONDON :
PRINTED BY C. F. ROWORTH, GREAT NEW STREET, FETTER LANE, E.C.

For the Report of the MOST HON. THE MARQUESS OF LANSDOWNE, *see p.* 19.

CHANNEL TUNNEL.

GENERAL MEETING

OF THE

Submarine Continental Railway Company,

CITY TERMINUS HOTEL, LONDON,

UNIVERSITY OF

FRIDAY, 17th AUGUST, 1883.

SIR EDWARD WILLIAM WATKIN, Bart., M.P., in the Chair.

REPORT.

PRINTED BY C. F. ROWORTH, BREAM'S BUILDINGS, CHANCERY LANE,

1883

The Submarine Continental Railway Company,

LIMITED.

Report of Proceedings at a General Meeting of the Members of this Company held at the City Terminus Hotel, Cannon Street, London, on Friday, the 17th of August, 1883,

SIR E. W. WATKIN, BART., M.P., presided.

THE CHAIRMAN: Gentlemen, the Assistant Secretary will read the Advertisement convening the Meeting.

Mr. SHEATH having read the notice,

The CHAIRMAN: Gentlemen, my first duty is to move,

> "That the Report of the Directors and the Statement of Accounts now submitted be received and adopted."

And I assume that you would wish those statements to be taken as read. Now, gentlemen, in the Report we inform you of the total receipts of capital, and the amounts of expenditure under their various heads, and of the balance that remains; and we also, as you have seen, recommend you to make a return of a portion of the money in hand, principally on the ground that we think it just as well that it should be in the pockets of the Shareholders as at the bank at a very moderate rate of interest. If anyone, however, assumes for a moment, that, by making that return, we mean in any way to slacken our efforts, or omit to take any steps in our power to urge on our great object, I wish to say that he is very much mistaken. Gentlemen, a cause which approved itself to the great Prince Consort, (in my humble judg-

ment the most sagacious man of the century,) to Mr. Cobden, Lord Beaconsfield, Lord Derby, and Lord Clarendon, and which has excited only the other day the able and eloquent advocacy of the Right Hon. John Bright, is a cause which it seems to me no man need be ashamed to be associated with. When we meet together on occasions of this kind, it is well to ask in what we have succeeded, and in what we have failed. Well, gentlemen, we have succeeded in convincing every one who is worth convincing that this work of ours can be easily, cheaply, and in a reasonable period of years, constructed. It was not many years ago looked upon as the mere dream of a very able French engineer, M. Thomé de Gamond, and the dream of that engineer was made practical very largely by the efforts of our English friend and colleague, Mr. Low, the eminent mining engineer. Mr. Low showed simple contrivances for ventilation which had hitherto apparently escaped the attention of civil engineers, and no doubt Mr. Low's plans and proposals were a very large contribution towards the future success of this enterprise. Well, gentlemen, in addition, there is no doubt that we have succeeded in creating in this country a distinct party of men cordially in favour of the future construction of the Tunnel. Again, we have associated the question indissolubly with the cause of peace and the union of nations. Then when we look at the other side—in what we have failed—there is no doubt that we have failed to convert the habitual prejudices of some of our great military "authorities" as they call themselves. We have also failed, I am bound to say, in inducing Her Majesty's Government to have an opinion of their own. And I will say, as an occasional supporter of Her Majesty's Government, in the presence of my right hon. friend, Mr. Cavendish Bentinck, an earnest opponent of the Government, and in the presence also of my friend Lord Hothfield as earnest a supporter,—that it is a matter of deep regret to me to be compelled on this question to quote against the Government the words of the Apostle Paul in writing to Timothy. He speaks of a certain class of men as "ever learning and never being able to come to a knowledge of the truth." Mr. Gladstone was once an enthusiastic supporter of the Tunnel, but, judging him by his actions, we must say that he has become, in con-

nection with this question, what is called in certain circles, a "backslider." (Laughter.)

You have had an inquiry, as the Report tells you, before a Joint Committee of the two Houses of Parliament. That Committee has not been able to agree on anything; but the four best members of that Committee, as we think, have been unanimous in adopting a report drawn up by Lord Lansdowne —one of the best and ablest documents I have ever read— so able that we shall, with your permission, have it printed* and sent to every Shareholder in this Company. But that inquiry, gentlemen, was conducted without counsel. I am not very much in favour of availing myself of legal assistance where it is at all possible to avoid it; but, I think, if we had had an able barrister in the committee-room, and thereby been able to ask the military and other gentlemen who are against this work for the causes of the faith (if it is a faith) that is in them, we should have shown the absolute and utter weakness of their arguments, and very probably the Report would have been of a different complexion. It is on that ground, mainly, that we recommend you in our Report to go next year and appeal to Parliament itself. It is the right of every body of Englishmen to petition Parliament for the introduction of a Bill, and we shall exercise that right with your permission, and we shall do the best we can to get this great cause heard in public, with due representation by counsel; and I have no doubt whatever that we shall prove such an overwhelming case that it will be impossible for a fairly chosen committee of Parliament to resist our representations. There is one point I must say that I very much regret, and, now that the Report has been issued, we are justified in criticising it. It is a great regret to me to see a statesman—young, ambitious and able,—like Lord Camperdown, attaching himself, in the beginning of his career, to what I believe will in a few years be regarded as an old-world prejudice. I have been searching to find anything in the evidence likely to influence a man of such high intellect who has studied and who has travelled—likely to lead him to imagining that there is something very evil and very wrong in two nations

* See print of Report at page 19.

being asssociated by the most facile means of inter-communication. I thought the other day that I found a reason. I found that this question was put to Sir John Hawkshaw, the great engineer, by the Earl of Camperdown. He says: "When you have been asked questions as to the danger to be apprehended from the Tunnel, you have always limited yourself and said you are an engineer, and that you would prefer, therefore, to shelter yourself behind that bulwark; but you are also an Englishman of, as we know, very wide understanding; have you ever considered the question from that point—are you free from apprehension as an Englishman?" You would imagine that an engineer who has been, I will not say boasting, but his friends have been boasting for him, of his connection with this enterprise, would certainly have made a plain answer "Yes" to that question. But what did Sir John Hawkshaw say? He replied: "I have long been looking at the question as an engineer as to its construction, and the probable utility of it as regards trade and commerce; but I have not given enough consideration to it in a national point of view to venture upon giving an opinion." I venture to think it is not impossible that Lord Camperdown's fine and able judgment might have been influenced by an extraordinary answer of that kind. If Lord Camperdown, looking at it, as he ought to do, entirely as an Englishman, imagined that a great leader of past Tunnel agitations had not made up his mind as an Englishman that this work ought to be done, that might make a man hesitate whose mind had been not sufficiently stored with the facts of this question.

Well, gentlemen, we have made a very remarkable discovery. You would imagine, by reading what the Duke of Cambridge and Lord Wolseley said, that the entire military opinions of this great country had been, were now, and ever would be, opposed to the construction of this Tunnel; but after some little trouble and difficulty we unearthed a document which has just been laid before Parliament and printed. That document is a report, stated to have been made by an eminent officer, Sir Drummond Jervois, with the knowledge, and sanction, and approval, of another very eminent engineer, Sir Frederick Chapman, and that Report of the 3rd of March, 1875, was as follows:—

"There appears to be no military objection to the proposed Tunnel, provided due precautions be adopted.

"Should this country, in alliance with France, be at war with another continental power, the existence of the Tunnel might be advantageous.

"Should this country be at war with France, the proposed Tunnel could no doubt be readily closed. Having regard, however, to the possibility of the Tunnel being unnecessarily injured under the influence of panic, and to the probable cost of repairing such injury, it is desirable to obviate, as far as possible, the necessity for adopting extreme measures, and with this object to pay due regard to defensive considerations in the construction of the Tunnel.

"Moreover, unless proper military precautions be taken, it might under some circumstances happen, that France might be able, in anticipation of a declaration of war, to send a body of troops through the Tunnel, and thus obtain an important military advantage. Such a body of troops could readily intrench themselves, and could be rapidly reinforced.

"If, however, suitable defensive arrangements are made, such an undertaking would be impracticable, and, even in case of war being imminent, no fears need be entertained which might lead to the partial destruction of this costly work."

Now, gentlemen, I asked a question in the House last night from the Minister of War, Lord Hartington, whether that report was the basis of a letter from Colonel Stanley to the Treasury of the 13th of March, 1875; and I asked further, whether there was any other document besides this report, and I was informed that there were other documents and minutes, but that they were looked upon as of a confidential character. Now the first question we should ask as to this document which is so important is, Why was it suppressed? Why was this document not published in the Blue Book of last year? And especially, if left out of the Blue Book last year, why was it not laid before the Committee who have just reported? That is one question; and another question naturally suggests itself. I see present a very distinguished General Officer, who would correct me if I were wrong; but officers high in service and in official positions do not make reports to

no one. They do not make reports on their own initiation. Some one must have asked Sir Drummond Jervois and Sir Frederick Chapman to make a report, and, when made, some one must have considered it; and I am, I believe, right in saying that the routine is that these reports are initiated from some department of the War Office, that when made they are passed through the hands of the War Minister, and then passed from the War Minister to the Commander-in-Chief, and the report is not acted upon unless the sanction of both these authorities is given to it. I have no doubt that that report was approved by the then War Minister, Lord Cranbrook, and the present Commander-in-Chief, the Duke of Cambridge; and we want to know (and I shall try and find out) how that report was suppressed, and how came about a change of opinion in the War Department, on the question of the Tunnel. (Hear, hear.)

One satisfaction you must have, gentlemen, and that is that everything that has been accomplished as regards this great work on the English side of the Channel has been accomplished by your own organization. No one else has a right to take credit for any practical step of any kind to prove that the Tunnel can be made, how it can be made, its probable cost, and how long it would take to make. You deserve, in fact, the whole credit.

Now, when the deputation of workmen went to Paris, and had an interview with President Grévy on this great question, he said: "Why do you come to me? We are all convinced on this side. You must go back to England and convince your own countrymen. If England is in favour of isolation and separation we shall regret it, but we cannot help it." Let us look at the position of affairs *then* and NOW. At present England and France are looking at each other with a "green-eyed jealousy." There are many questions about us which a rash statesman on either side might make use of to blow up a war between the two countries—sometimes wars are blown as quickly as bubbles. There are excuses all round that might lead to panic and preparations between England and France out of fear of some great and deadly struggle. That is the state of things *now*. Let me ask how it might have been? Let us assume that the two great nations, the leaders of civilization, were hand in hand, and

with mutual good faith constructing a golden band to connect together this island with the Continent of Europe, intending to bury for ever, deep below the bottom of the sea, the history—the bloody history—of the last 800 years. Would it not have been impossible that misunderstandings about comparatively small questions could have arisen between the two countries, if associated,—the eyes of all the world upon them,—in a united work so beneficent and so holy? Gentlemen, that is as the matter might have been. If we want a lesson to ascertain the public opinion of the world on the conduct of our Government and their great military advisers, we could hardly do better than look at the caricatures of kindred nations. There is one somewhere in this room—a caricature from the American Punch, "*Puck*." The inscription is "The British Lion terrified by the Crow of the Gallic Cock." Well, you know there is a popular idea that the only thing that frightens a lion is the crowing of a cock. You will notice in that caricature Lord Wolseley on the back of the British lion. The British lion, looking dreadfully alarmed, is galloping away with his tail between his legs, and the typical British sailor, John Bull, dressed in marine uniform, is scampering off, each terrified by the French cock, crowing at the mouth of the Tunnel.

That is the position we have placed ourselves in—to be laughed at, in fact, by all the world. I must say, that if I were the Duke of Cambridge or Lord Wolseley, I should be sorry to leave behind me the reputation of having given my position and my influence to that bad cause,—the separation and isolation of this country—when we might have annexed the whole Continent to our shores, and gained for our liberty and civilization predominance in Europe. But great works, such as ours, are simple products of the one great truth, universal and irresistible; and with the power of patience and working with our "might," we shall succeed at no distant period of time. (Cheers.)

Mr. Richard Withers: I have very great pleasure in seconding the resolution which has been so ably proposed by Sir Edward Watkin, and in doing so I would take occasion to observe, that though we may be much disappointed with the report of the Committee which has sat on this question, we have not the least

occasion to be discouraged or disheartened; for in my experience of the great works of improvement in this country (and I regret to say it is now a very long experience), I have never known an instance in which any great change affecting our moral and social welfare or the commerce of this country was propounded, but what it met with great opposition at first, not only from those who were ignorant, but from those who should have known better—who should have known that they were standing, by their opposition, in the way of the best interests of the country. That great invention, Gas, had to fight its way against alarmists and prejudices. Sir H. Davy said it would not travel in pipes, and Municipal Corporations for a long time delayed its adoption. Well, then, another great improvement was the railway system.

I am old enough to have seen the first railway—the Manchester Railway—opened in 1830. We all know how that was contended against. I know people who, to the last of their lives, would never go into a train having once seen an express train go through a station without stopping. No doubt it is a terrible sight to a man who knows no better, than to think that the lives of every person in that train were in danger; whereas in reality, the persons who were sitting down in it (reading their newspapers, or chatting to each other, or eating their luncheon), were thinking nothing about danger. Fortunately, however, the Railway system succeeded. George Stephenson, when he first went to Parliament, was laughed at when he gave it as his opinion that fifteen miles would be about the pace of a goods train; and one gentleman, of bucolic tendencies, even suggested what he thought would be a poser, when he asked what would happen if a cow strayed on the line. We know the answer of Stephenson, "Sae much the worse for the coo." The next great work in this country was the adaptation of steam power to propelling vessels on the ocean. We know that that met with great opposition in political circles. It was said, "Look at the facilities you will give to the French for landing ships on the English coast." If the first Napoleon had had steam launches in 1805, would he not have landed troops from Boulogne? I heard the learned Dr. Lardner, at Liverpool, before a select audience of scientific people, prove to demonstration, by figures, that no ship could ever be able to carry a cargo of coal sufficient to steam her across the Atlantic.

No doubt steam launches give greater facility to tyrants like the great Napoleon, and he might have availed himself of such a system, but do not stop the improvements in science because they give facilities for a time to such tyrants, for the very existence of

such facilities almost prevents the occurrence of such circumstances as tyrants take advantage of. Bring men together—unite men together—and better feelings prevail, doing away with most of the incitements to war. Look at the position of America, the first of our great colonial children. In a moment of anger we parted, and the feeling of bitterness then engendered is now only beginning to be buried, and that improved feeling has been brought about owing to steam power, by means of which, instead of a journey to America taking three weeks, it is accomplished in seven or eight days. The greatest benefactors of mankind are those who bring them together. I do not mean to say that wars are going to cease from the face of the earth, but I believe that lengthy wars will become almost impossible. We could not have a thirty years' war again—and short wars will become improbable. The fact is, the more you initiate a desire for commercial relations the more nations are bound over to keep the peace towards each other. A terrible mistake was made, not only by scientific men, but by great politicians like Lord Palmerston, in opposing the project of the Suez Canal. Politicians looked at that project as a danger, as if anything could be a danger which brought us so near to those 200,000,000 of people who are ruled by a handful of Englishmen. It was, however, regarded in that light and we stood aside. It was said that Stephenson, who was sent out by Lord Palmerston, stated that the scheme was not feasible; but M. de Lesseps, aided by the French Government and the late Khedive, who supplied so much money towards it, proved to demonstration the feasibility of it, and England now sends 80 per cent. of the tonnage through it. And the other day our peace-at-any-price Government, almost with the exception of John Bright, who retired before the war operations commenced, our Government thought fit to send an army to keep the route to India, which they said never could be made, free for our ships.

There was another great scheme—the laying of the Submarine Telegraph to America. I remember some men in connection with that project who, like ourselves in this, put a thousand pounds into the scheme to try and see if it could be accomplished. I believe that this project can be, as that one was, accomplished; and, through the experience of Sir Edward Watkin, it has been proved experimentally to the satisfaction of every mind that it can be done. The people then put a thousand pounds into that Submarine Cable when the thing was going to be laid, but it snapped and broke, and everyone said, "Our money is gone." Well, what happened? They

fished up that broken cable from the bottom of the ocean, spliced it together, and England and America have never ceased talking to each other since. You must never despair of anything; above all, not of mankind. There will always be in the world men who are not worth doing anything for, but the great mass of mankind are worth fighting for, and taking trouble for, and spending money for. I remember the sensation with which I read of the great Tunnel through the Alps, between Italy and France, being successfully completed. We all remember the excitement of the work on each side,—the Italian workmen on the one side, and the French on the other, meeting together and hearing one another's voices speaking through the still remaining rock. And you remember reading of the shouts of joy which both raised when the last piece of rock was knocked down. They rushed together into each other's arms, kissed each other, and shed tears of joy, such was the excitement from the "one touch of nature making the whole world kin." This is such another work which is being carried on by Sir Edward Watkin and his colleagues, and it will soon be productive of a joy like that which I have been speaking about. Some men have been speaking for some time, in connection with this project, as if they were suffering from a sort of horrible nightmare; but it is but a dream, it will pass away. We shall wake up and cast off this dream. I have no doubt that sooner or later we shall attain our object; never mind the temporary delay, for no great work was ever accomplished without delay, and sometimes the greater the delay and the difficulty, the greater the proof of the importance of the work which has to be accomplished. And we may even eventually find support from our present opponents, who for very shame will hide their heads, and say, "go and finish your great work."

Mr. Alderman HADLEY: With your permission I should like to say one or two words, but first allow me to say this, I fully endorse every word that you, Mr. Chairman, and you also, Mr. Withers, have said, and all the arguments by which you have supported your statements. It has been my privilege during the last two or three months to have travelled through America, and I should wish to give you the views of the American people upon this work. I will not refer to arguments in any way, whether of a military or any other character. I am entirely convinced that this measure is in the interest of commerce; and is it not of great importance that the two Anglo-Saxon people—ourselves and the Americans—should be brought together in the interests of trade and commerce for the

benefit of the human race throughout the world. There is a feeling in America that the greater the facilities you can give, the quicker the locomotion you can give, for not only the transport of peoples themselves, but also for the transport of the produce of the different countries, so much greater will be the benefits accruing to them all. It is to be remembered that America is quite a young country, but it is one of great and rapid development. At the present moment it has about 50,000,000 of inhabitants, but in the course of time, and in a very short time, no doubt it will have 200,000,000, and because of the rapid development of the people increased facilities for inter-communication are required. Men there are exceedingly astonished and surprised at the action of our Government, our military authorities, in the delay which they cause, and the opposition they give, to increased facilities of communication between England and the Continent. Seeing that there is a great and increasing population in America, seeing, also, that there are millions on the other side of the Channel to whom we must have communication personally, and for the interchange of commerce, they are astounded—having regard to the position we occupy in England of a point between those two hemispheres—that this opposition should be so assisted by our own Government. Speaking on behalf of the commercial community of the world, who look on you, Mr. Chairman, as a great authority on this question, and as engaged in a great and philanthropic work for the benefit of the whole world, I have to express the feeling of the other side of the water that success may attend your efforts, and that we may see this scheme accomplished, and the world reaping the benefit of it.

Capt. PAVY: If I may make an observation, I would say that I think we should urge on you to go on in the path which you have already followed. I believe, Mr. Chairman, it is perfectly true, that every advantage gained in this matter has been gained through your efforts, and I remember (when taking these shares of mine while I lay on a bed of sickness) feeling sure that you would be able to pull the thing through. As a military man, I have read the evidence given, and I have noted what has been said before the Committee, and I think the majority of the men who have given their evidence have been men whose previous history has not given them the sort of experience to make their opinions of any very great worth. For instance, I would rather have the opinion of a great engineer than that of Lord Wolseley. But Lord Wolseley in this matter has taken very high ground.

His opinion has been cited by everyone, and, I believe, has given a great deal of hindrance to this movement. Look at the opinions of engineers, and I believe you will find their judgment is favourable. I believe the opinion of every engineer and of every man who has studied the history of sieges would be in favour of this scheme. Few people realise the length of time it would take to congregate or pass 50,000 or 100,000 men through a Tunnel like this. Look back and you will see always that the besieged are the people who have to cave in. Why? Because it is impossible to get men through gateways and such channels: a few men comparatively outside a fortress having greater power than many inside. We should have a small passage here, which it would take days to pass 100,000 men through. Assume that 10,000 or 20,000 passed through, what would be the effect if they had possession of the Tunnel? If Englishmen are what they have been in previous times we could surely congregate in a few hours sufficient men in front of them and vessels in the rear to prevent any disaster occurring to our country. I merely ask you now if you are going on as you have before. I hope that I may be a Shareholder in this Tunnel when it is completed. I would suggest to you to obtain the opinions of scientific men on this matter; you should ask the opinion of engineers, who will destroy what Lord Wolseley has said; but even assuming there is risk, no good is obtained without it, and the advantage here justifies its being taken.

General Brownrigg, C.B.: Mr. Chairman, you did me the honour of inviting me to be a member of the Scientific Committee which went over the ground and examined the approaches of the Tunnel which you are speaking of to-day, and I can quite agree with the opinion of the last speaker how important it is that you should have the opinion of good engineer officers; and for that reason, when you asked me to name a military colleague, I suggested Sir Frederick Chapman, who had the command of the left attack during the whole of the Siege of Sebastopol, and I felt that he was a good man to choose. It is the habit now of considering that old soldiers are worn out. They appear to think that those who have had practical experience in warfare are the last men to be consulted, even if they should be consulted at all. And it appears to me that the military opinions which have been expressed arise in a great measure from civilian War Office clerks. I must say with regard to the mere defence of that Tunnel, that I think a corporal's guard with a Gatling gun would be all that

is necessary. I should be exceedingly sorry to be the attacking party with that little handful of men at the mouth of it to defend it.

The CHAIRMAN: I will now ask those in favour of the resolution to kindly hold up their hands. Those of the contrary opinion? That is carried unanimously. Then you will observe that the Report recommends the return of so much money to the Shareholders. I said in two or three words, enforcing the recommendation in the Report, that we did not mean in any way by this return of money any retrogression, but that our simple idea is, that it is just as well that the Shareholders should hold their own money. This will not interfere with the participation by any Shareholder in the benefits of the concern, nor, on the other hand, will it restrict the liability of any Shareholder. I will now move:—

> "That the Directors are hereby empowered, at their discretion, to take such steps as may be necessary to carry out the recommendation contained in the Report, that the sum of 2*s*. per share be returned to the Shareholders."

Of course a matter of that kind can only be done legally, and we thought it well to have special authority from you in this matter.

Lord HOTHFIELD: I will second the motion.

Lord ALFRED SPENCER CHURCHILL: I have very great pleasure in supporting this motion, inasmuch as looking at the balance-sheet you will see that there will still remain a considerable balance in hand, quite sufficient to support any action that may be taken in Parliament in another Session. I have, therefore, great pleasure in supporting this proposal. I hardly intended to make any observation, but after what has been stated by Captain Pavy and General Brownrigg, as to the facility with which the Tunnel could be guarded, I wish to say that I entirely concur in their remarks. I think the great mistake which the military authorities have been going upon is in supposing it will require a largely increased inland fortress, manned by 10,000 men, to guard an entrance which, you may say, is as small as a rabbit hole. Now, really for my part, I am strongly opposed to all inland fortresses in this country, unless for the purpose of guarding an arsenal or a dock-yard. Inland fortresses are mistakes otherwise, as, in the event of an invasion, the whole of the garrison is locked up in that fortress. Supposing an invader were to land on the coast, what would he do first? He could bring 50,000, or 100,000, men into the country

if he thought fit, and his first endeavour would be to lock up the fortress at Dover, or wherever else it might be situated, so as to prevent the garrison from taking part in the active defence of the country. I maintain that inland fortresses generally are radical mistakes. France would now be a stronger country than she is if she had never fortified Metz. However, I do not think that after the eloquent addresses which we have had from Sir Edward Watkin and Mr. Withers on the principle of the question that anything I can say would add weight to it. I will, therefore, merely beg to support the resolution which has been proposed.

Mr. ALEXR. BEATTIE: Sir Edward Watkin and Gentlemen, I think there could scarcely be one of our number that will differ from the opinions that have been expressed here. I was especially struck with Captain Pavy's opinion, because it is just one of the points which seems to me, from the evidence I have read taken before the Parliamentary Joint Committee, that was left out. It was the missing link in the whole chain which, if properly put, would bind the whole thing. I will now merely, after what has been said, support the resolution.

The CHAIRMAN: You have heard the resolution, which has been seconded and so ably supported. Those in favour of it? Those against? That is carried unanimously. I believe that is all our business.

Mr. BEATTIE: There is just one other matter. I will call on my brother Shareholders to join me in giving a vote of thanks to the Chairman and Directors for the zeal, attention and ability which they have displayed in connection with the affairs of the Company hitherto.

Mr. Alderman HADLEY: I have much pleasure in seconding this motion, and to assure them that they possess the entire confidence of the Shareholders, and that the wish of the Shareholders is that every effort should be made in the future, so that this grand work may be accomplished.

Mr. BEATTIE then put the motion, which was carried unanimously.

The CHAIRMAN: Gentlemen, my colleagues and myself are exceedingly indebted to you for the confidence you have displayed in us on this as on all previous occasions. I ought (but really, upon

my word, I hardly felt that I had heart enough to do it) to have alluded to the great loss we have sustained in the Half-Year, as is mentioned in the Report, by the death of our very kind and able colleague, Sir Philip Rose, and also to the national loss caused by the death of our friend Mr. Spottiswoode, late President of the Royal Society. If I wanted an argument for the adhesion of the politicians of the country to the Tunnel question, it would be that Sir Philip Rose was one of the ablest supporters of it, as representing the opinion of Lord Beaconsfield; and if I wanted scientific support of it, I should refer to Mr. Spottiswoode. General Brownrigg has spoken of the supersession of old soldiers. Benjamin Franklin said that if he had died at seventy-five, he would have lost the ten most useful years of his life. And I will ask, what would have happened had the great Duke of Wellington been retired at sixty? The fact is—always making allowance for physical weakness—that as men grow older they have greater capabilities and greater experience, and the idea of denuding the nation of that experience appears to me a thing "no fellow" can understand. I look on the Tunnel as a great work of peace. As a German said to me once, "If you make that Tunnel, England and France must be one nation for ever." I want that. I believe that is the entire opinion of every Shareholder in this undertaking,—and, please God, we will realize it. (Cheers.)

The proceedings then terminated.

At a General Meeting held at the City Terminus Hotel, Cannon Street, London, on Friday, the 17th day of August, 1883,

Sir E. W. WATKIN, Bart., M.P., in the Chair,

It was moved, seconded, and Resolved unanimously:—

"1. That the Report of the Directors and the Statement of Accounts now submitted be received and adopted."

"2. That the Directors are hereby empowered at their discretion to take such steps as may be necessary to carry out the recommendation contained in the Report, that the sum of 2*s*. per share be returned to the Shareholders."

The Chairman having left the Chair,

It was moved by ALEXANDER BEATTIE, Esq.; seconded by Alderman HADLEY; and Resolved unanimously:—

"That the best thanks of this Meeting be given to the Chairman and Directors for the zeal, attention, and ability which they have displayed in connection with the affairs of the Company hitherto."

August 17*th*, 1883.

THE MARQUESS OF LANSDOWNE'S REPORT.

1. In conducting the inquiry with which we have been entrusted, we have endeavoured to limit ourselves as strictly as possible to an investigation of the points which we believed to be specially referred to us.

2. We were directed to ascertain whether it was expedient that Parliamentary sanction should be given to a submarine communication between England and France, and to consider whether any or what conditions should be imposed by Parliament in the event of such communication being sanctioned. We do not believe that it is incumbent upon us to report upon the possibility of establishing such a communication, or upon the special engineering features of the schemes which have been lately before the public.

3. The possibility of forming a Tunnel under the Channel, as to which we gather that some diversity of opinion exists, could, we apprehend, only be demonstrated by the successful execution of the work.

4. There is, in our opinion, no reason for believing that the interests of this country would suffer if the attempt were to be made and were to result in a failure.

5. The inquiry, limited by these considerations, appears to resolve itself into two parts:

(1) A consideration of the commercial or other advantages which might accrue to this country from the establishment of submarine communication between it and the continent of Europe.

(2) An examination of the effects which the existence of such communication might have upon the national security.

We have taken a considerable amount of evidence bearing upon both points.

6. With regard to the former, we have endeavoured to ascertain the extent to which a Tunnel of the character contemplated by the projectors of the schemes now before the public, would suffice to carry a largely increased amount of traffic.

7. There is a wide discrepancy between the estimates which have been laid before us, as to the carrying capacity of a double line of railway, worked under the peculiar circumstances which will be present in the case of a Tunnel line.

8. It is obvious that in the case of a railway running through a Tunnel of the altogether unprecedented length of thirty miles, ap-

proached by steep gradients at each end, and used for the purpose of carrying goods as well as passengers, extraordinary precautions would be called for; with regard to these we may express our belief that if the formation of the Tunnel were to be permitted, it would be found necessary to insist—

(1) That under no circumstances should more than one train be allowed to run at the same time over the five mile gradients at each end of the Tunnel.

(2) That there should be a sufficient number of block stations in the Tunnel, and that two of these should always be blocked at once.

(3) That a certain number of hours out of the twenty-four should be set apart for the examination and repair of the permanent way, and for the relief of the block signallers.

The details of these arrangements would, we apprehend, be fully considered and regulated from time to time by the Board of Trade.

9. The adoption of these precautions would necessarily impose certain limits upon the traffic which might be run through the Tunnel. That traffic might possibly be still further limited in the event of the ventilation of the Tunnel presenting difficulties greater than those foreseen by the promoters. This subject, which we regard as inseparably connected with that of the structure of the work, is not one which we consider to have been referred to us. We have, however, during the course of our inquiries, received several suggestions upon the question, and we may without impropriety point out that the Channel Tunnel will, if made, differ from all existing Tunnels in its great length, and in the fact that throughout the whole of that length it must necessarily be below the level of both its entrances.

10. Under these circumstances it can scarcely be doubted that the problem of providing adequate ventilation for the Tunnel will be one of some difficulty, and we do not doubt that before Parliamentary sanction is given to any scheme for submarine communication with France, special attention will be given to the appliances for securing persons using it from risk or inconvenience caused by a defective supply of respirable air.

11. The importance of the subject will be obvious when it is remembered, that if the Tunnel were constructed, and the expectations of the promoters in regard to its ventilation disappointed, this country might find itself in the position of having incurred certain liabilities (of which we shall speak presently) in connection with the defences of the exit of the Tunnel, without obtaining any, or at any rate adequate, compensation in increased facilities of communication.

12. The observations which we have to make upon the probable carrying capacity of the Channel Tunnel are founded upon the assumption that those difficulties which attend its effectual ventilation have been successfully overcome.

13. Subject to this reservation, the evidence leads us to believe that a Tunnel of the character of those now projected would be capable of accommodating a very large amount of passenger and goods traffic.

14. Thus Mr. Grierson, general manager of the Great Western Railway, expresses his belief that twelve passenger trains per week day and two on Sundays, and four goods trains per week day, carrying 2,316,000 passengers and 375,000 tons of goods per annum, could be run with safety through the Tunnel.

15. Mr. Oakley, general manager of the Great Northern Railway, considers that after setting apart a portion of the twenty-four hours for goods traffic, which would be conveyed at a slower rate, an average of four trains per hour might be maintained.

16. Major-General Hutchinson, one of the Railway Inspectors of the Board of Trade, states his opinion that:

Assuming the speed of passenger trains and goods trains to be respectively forty and twenty miles an hour, and the number of each to be about equal.

Assuming also that there are two block stations in the Tunnel, and that two sections are blocked to increase the safety of working, twenty-five trains might be passed through in each direction; or, making the necessary reduction for repairs and renewals of permanent way, about 1,500,000 of passengers and 400,000 tons of goods per annum.

General Hutchinson adds that, With speeds of forty-five and twenty-five miles an hour for passengers and goods trains respectively, the number of trains, under the same assumption as above as regards block stations, would be thirty-one, capable of conveying about 1,500,000 of passengers and 400,000 tons of goods, and about 1,750,000 of passengers and 500,000 tons of goods respectively per annum.

17. Colonel Yolland, the senior Railway Inspector of the Board of Trade, would set apart six hours out of the 24 for the maintenance of the permanent way, but states that in his opinion the Tunnel could be worked safely with three trains an hour, or from fifty-four to sixty trains in the eighteen hours.

18. The above estimates are, it will be observed, founded upon the assumption that two lines of rails only are laid in the Tunnel; it is, however, highly probable that if the traffic were to expand, a time would come when the number of lines would be increased, and the carrying capacity of the Tunnel proportionately augmented.

19. We have now to consider the extent to which, if railway communication were established between England and the Continent, the traffic between them would be affected.

20. We express with confidence our opinion that it would be reasonable to anticipate an immense development of the passenger traffic.

21. The number of persons now crossing the Channel is, if we bear in mind the extent to which the population of the British Islands is connected by business and other ties with that of the Continent of Europe, remarkably small. The total passenger traffic between England and the Continent during the year 1882 is represented by a total of 464,000 journeys between English ports and

Calais, Boulogne, and Havre, and 50,000 journeys between English and Belgian ports.

22. It is to be remembered that the population of the British Islands is, at the present time, between 35,000,000 and 36,000,000, and that of Belgium, Holland, Germany, and France about 92,000,000; while, if the population of the rest of Europe be added to that of the four countries named above, and the population of North America to that of the British Islands, a total of 100,000,000 upon one side of the English Channel and of 300,000,000 upon the other is the result. The fact that with such a population some 250,000 persons only should cross the Channel (for most of the travellers either way make two journeys), establishes, in our opinion, the conclusion that large numbers of persons, who would make the journey for business or pleasure, are deterred from so doing by the inconveniences of the present passage. These inconveniences have, no doubt, been diminished during recent years, with the result of steadily increasing the number of passages recorded.

23. Further improvements in the harbours, and in the vessels used, would, no doubt, lead to a further increase; but we are of opinion that any route depending upon a sea passage must continue to be to some extent affected by those accidents of wind and weather which at present render the passage of the Channel so distasteful to travellers, and which account for the remarkable fluctuations in the number of persons crossing it from time to time.

24. The shortening of the journey between England and the Continent, which would result from the substitution of a train for a packet service between Dover and Calais, would also operate in the direction of increasing the number of passengers. The fact that a large section of the travelling public at present prefer the shorter and much more expensive route by way of Folkestone and Boulogne or Dover and Calais, to the slightly longer but much cheaper journey by way of Newhaven and Dieppe or Southampton and Havre, shows that travellers are, as a rule, disposed to give the preference to the most convenient rather than to the cheapest route.

25. The amount of the expansion of passenger traffic which might be expected is obviously a matter of pure conjecture. We observe, however, that the witnesses whom we have examined, including several of the most eminent of our railway managers, are unanimous in expressing their belief that it would be very large indeed.

26. Mr. Grierson, the general manager of the Great Western Railway, believes that the present number might be doubled in five or seven years, and trebled in fifteen.

27. Mr. Oakley, of the Great Northern Railway, anticipates that it would be trebled in a year and a half, and would continue to expand.

28. The majority of the witnesses representing commercial in-

terests are confident that the Tunnel would be used to an immense extent by persons travelling to and from the Continent on business.

29. We take this opportunity of referring to a scheme submitted to us by Mr. J. Fowler, C.E., for the introduction of a system of steam ferries, by means of which whole trains might be conveyed across the Channel, and thus transferred from English to Continental railway lines and *vice versâ*.

30. It is claimed by Mr. Fowler for his scheme that it would secure for the public the same advantages, in the way of through communication, as those to be obtained by means of a Tunnel route; that its adoption presents none of the difficulties which present themselves in the way of the latter; that the expense which it would involve would be materially less; and that by depending upon it in preference to a Tunnel, all possibility of additional risk to the country would be avoided.

31. We are unable to express an opinion upon these alleged points of superiority without a special investigation of Mr. Fowler's project. No proposals founded upon it are at present before Parliament, and we do not consider that the fact of such a project having been in Mr. Fowler's contemplation would be of itself sufficient to warrant us in reporting adversely upon the proposal which we have been specially directed to examine.

32. We proceed to consider the effect which the opening of a Channel Tunnel might be expected to produce upon the commerce of this country.

33. With regard to this, we may observe that there is no difference of opinion as to the inconvenience of the existing route for goods traffic. The uncertainty which is inevitable in the case of communications liable to be affected by wind and weather, and interrupted by transfers from the railway truck to the steamer and the steamer to the railway, the delay, expense, and risk involved in transhipment at the ports of embarcation and disembarcation, and the cost of insurance, have all constituted serious hindrances to our international commerce.

34. The trade in certain classes of goods is especially liable to be affected by these causes. Of these the principal are:—

(1) Perishable commodities, such as fruit, fish, flowers, vegetables, and other food supplies.
(2) Fragile articles, such as pottery, the lighter sorts of machinery, and the more delicate textile fabrics.
(3) All small articles requiring careful packing, and of which the value is great in proportion to their bulk.

35. That the Tunnel, if made, would be largely used by goods of these classes we do not doubt.

36. We may refer in support of this anticipation to the evidence of Mr. Slagg, M.P., of Mr. Oakley, who has furnished us with an interesting enumeration of the commodities for the conveyance of which the Tunnel route would probably be used, of Mr. Samuelson,

who has described the adverse effects of the existing arrangements upon the trade in agricultural machinery, of Sir Jacob Behrens and Mr. Lee, who have given evidence in favour of the Tunnel in the interest of our textile manufactures, and of Mr. Wedgewood, who has pointed out the large saving which would result to the pottery trade by the substitution of through carriage in trucks for conveyance partly by rail and partly by sea to the Continent.

37. There is, however, a large traffic in commodities not falling within these descriptions, which is, nevertheless, carried on under disadvantageous conditions from the causes to which we have referred.

38. In modern commerce, speed and certainty are, as Sir Jacob Behrens has pointed out to us, not less essential than cheapness in cost. The following extract is from his evidence as to the trade in woollen fabrics:—

4513. Sir MASSEY LOPES.] I understand that the whole of your evidence in favour of the Tunnel really depends upon this: that it is a question of rates? —More of speed than of rates, and certainty of delivery. That is the greatest advantage that I expect from it.

4514. I understood you to say just now that unless you had some security that the rates were not increased for your manufactures as between Bradford and the different towns on the Continent, you would be adverse to the Tunnel? —I should not advocate it.

4515. So that really it is a question of rates?—Yes, but, as I have already said, it is more a question of speed than of rates.

4516. But still one of your conditions is the rates?—Yes; but it is the secondary one; it is not the highest.

39. We have no reason to doubt the statement made to us by several witnesses to the effect that of recent years it has become unusual for retail traders to retain large stocks, and that the system of ordering commodities as they are required in small quantities at a time from the manufacturers is in consequence of the keenness of commercial competition becoming habitual among the merchants both of this and of other countries.

40. To a trade carried on under these conditions the punctual and rapid execution of orders is all important.

41. We do not doubt that the delay and irregularity inseparable from carriage by sea in its present condition have operated to the serious disadvantage of English manufacturers and exporters, and that the substitution for the present route of one more rapid, more punctual, and attended by fewer risks and inconveniences, would occasion a large expansion of our trade, and enable it to compete with that of foreign countries under infinitely more favourable conditions.

42. These considerations would, we believe, affect not only those special branches of commerce to which we have referred already, but also the trade in other articles for which, from their cheapness and bulk, carriage by water would naturally present superior attractions.

43. The extent to which this will be the case must remain a matter of conjecture. There are many classes of goods for which it may fairly be presumed that conveyance by sea will always be preferred; where rapid delivery is not an object, where the goods conveyed are not liable to deterioration in transit, the sea route, so long as it remains the cheapest, must continue to hold its own.

44. It is, however, a remarkable fact, that for some time past, both in the Continent of Europe and in America, carriage by rail has competed successfully with carriage by water in cases where both were available, and there is no reason why such competition should not take place in the present instance.

45. The extent to which it will be possible for the Tunnel route to compete with the different sea routes across the Channel, must, of course, depend upon the rates at which goods are conveyed over the former, and these charges again must form the subject of future adjustment. The evidence, however, which we have received has satisfied us that even if they were apparently higher than those for conveyance by sea, it would frequently be to the advantage of exporters to submit to them, and to avoid the delays, risks, and expenses incidental to a sea voyage.

46. We may, before leaving the subject of rates, observe that the existence of alternative routes by sea will, in all probability, have the effect of keeping within reasonable limits the charges made for conveyance by the Tunnel route.

47. We cannot doubt that the Tunnel, once opened, would not only afford a profitable and expeditious route for the conveyance of a portion of the goods traffic already in existence, but would lead to a large expansion of the trade between this country and the Continent. We share the belief expressed, almost unanimously, by the witnesses who have appeared before us as representatives of various commercial interests in this country, that the introduction of improved facilities for communication between one country, or one district, and another, has invariably led, if not to the creation of new trades and new industries, at all events to a development, often far in excess of the most sanguine expectations, of those already in existence.

48. Such an expansion of trade has followed from the introduction of through rates, and from the removal of interruptions of gauge in this country, and from the establishment of improved communication and the overcoming of physical obstacles on the Continent of Europe and in America; and we have no reason to doubt that it would follow, if the disadvantages occasioned to international commerce by the existence of the English Channel were to be successfully removed.

49. From such a development of the trade between the United Kingdom and the Continent this country would, it can scarcely be doubted, be the greatest gainer.

50. Owing to the peculiar position which it occupies in the commercial system of the world, it has, we believe, more to gain than any other nation by an improvement of its trade routes, and more to lose by the neglect of any opportunities which may present themselves for their improvement. The greatest distributor of commodities in the world, it is, above all nations, interested in the improvement of those channels through which that distribution is effected. This consideration is entitled to the greater weight, because the enterprise of our Continental competitors has, by the improvement of Continental harbours and the facilitation of through traffic in goods throughout the Continent, already been successful in threatening our supremacy in the *entrepôt* trade. We desire to express our belief that not the least material of the arguments in favour of the establishment of submarine communication is to be found in the fact that it would probably tend to retain for us a large amount of business which recent changes upon the Continent are already tending, and may still further tend, to divert from our ports.

51. The volume of the trade which would be likely to make use of the Channel Tunnel, were that route opened for the conveyance of goods at rates sufficiently advantageous to induce exporters and importers to make use of it, must, as we have already pointed out, remain a matter for conjecture. It is, however, material to consider the total amount of the trade of which a portion might be attracted to the Tunnel, and to ascertain the value of those sections of it which are most likely to be so attracted.

52. We learn from tables which have been prepared for us under the direction of Mr. Giffen, in the Board of Trade, that of the total trade of the United Kingdom, imports to the value of £151,000,000 come to this country from the Continent of Europe, and exports to the value of £127,000,000 are carried from this country to the Continent. These exports and imports represent about two-fifths of the exports and two-fifths of imports of the United Kingdom to and from the whole world.

53. It is to be observed that, of the above exports, £81,000,000 are British and Irish products (about one-third of the British and Irish products exported from the United Kingdom); while the foreign and colonial produce re-exported from this country to the Continent is valued at £46,000,000, or three-fourths of the total amount of foreign and colonial produce distributed by this country. In addition to the distribution of produce to this amount, it is necessary to take into consideration the business spoken of specially as that of trans-shipment, which amounts to about £12,500,000 a year, of which £9,500,000, or more than three-fourths, is received from the Continent; while £2,800,000, or about one-fourth, represents commodities sent, after trans-shipment, to the Continent. Besides these, there is a large but fluctuating trade with the Continent in bullion, and a large traffic in securities. The total of our transactions with the Continent, including imports, exports, trans-

shipment, and bullion, amount, in round numbers, to £300,000,000, or £150,000,000 each way.

54. From other tables which have been put in by Mr. Giffen, in illustration of the movements of shipping, it appears that in 1882 the entries of shipping in the various ports of the United Kingdom, from Europe, amounted to 20,000,000 tons, or nearly three-fourths of the total entries from all countries; and the clearances to 18,500,000 tons, or nearly two-thirds of the total clearances to all countries.

55. A fair idea of the total amount of the trade liable to be affected cannot, however, be formed, unless to the figures quoted above be added those representing the trade of the United States and Canada with Europe, excluding the United Kingdom. With regard to this, Mr. Giffen estimates the amount of the imports into the United States from Europe, excluding England, at £32,000,000, and the exports from the United States to Europe, excluding England, at £52,000,000. Adding to these amounts the trade between the United States and Europe in bullion, the total for the year 1881 of the trade between North America and the Continent of Europe may be taken at £100,000,000.

56. The total trade between the Continent of Europe on the one hand, and the United Kingdom and North America on the other, may therefore be set down at £400,000,000 annually, or £220,000,000 each way.

57. With reference to the prospects of the Channel Tunnel, it is important to distinguish the amount of the trade referred to above which belongs to those countries of Western Europe, the commerce of which would be most likely to take advantage of improved communications between England and the Continent. We find accordingly that, of the total of our imports from the whole of Europe, two-thirds, or £98,000,000, were from Germany, Holland, Belgium, and France; while, of our total exports to all Europe, two-thirds, or £88,000,000, were to these four countries. Of these exports, £50,000,000 were of domestic produce, or five-eighths of our exports of such produce to all Europe, while £38,000,000 were of foreign and colonial produce, or four-fifths of our exports of foreign and colonial produce to all Europe. Of our distributing trade, by far the greater portion is therefore carried on with our nearest Continental neighbours, with whom also we transact a trans-shipment business represented by £8,000,000 out of £9,500,000 worth of goods imported for trans-shipment from all Europe; and of exports valued at £2,000,000 out of £2,800,000 exported after trans-shipment to the whole of Europe.

58. Of the bullion trade nearly the whole imports and the great bulk of the exports are from and to these countries, with which our total annual trade, including imports, exports, trans-shipment trade, and bullion, amount in round numbers to £200,000,000, or £100,000,000 each way, out of £300,000,000, or £150,000,000 each way, our total trade with all Europe.

59. Of the trade between the Continent of Europe and the United States, nearly the whole belongs to these four countries, the total trade of which with the United Kingdom and the United States may, Mr. Giffen considers, be taken at £300,000,000, or £150,000,000 each way, exclusive of traffic in securities and passengers.

60. The shipping statistics relating to the trade between the United Kingdom and the same group of European countries show that about four-sevenths of the total tonnage, including entrances and clearances to and from all Europe, belong to Germany, Holland, Belgium, and France. A table printed in the Appendix to this Report illustrates the rapid expansion which has been undergone by our trade with these countries during the last twenty years.

61. The above figures establish conclusively,—

(i) That the volume of the traffic at present passing across the seas which separate the British Islands from the Continent of Europe, and consequently liable to be affected by the existence of a Channel Tunnel, is enormous.

(ii) That a very large proportion of that traffic is between the United Kingdom and those four countries (Germany, Holland, France, and Belgium), our trade with which would presumably be most liable to be so affected.

62. In the face of these facts it may be predicted with confidence that any improvement in the routes followed by so vast a body of trade cannot fail to have far-reaching results in the development of existing traffic, and in the creation of new.

63. This view is justified, not only by our knowledge that such an expansion invariably follows upon the improvement of trade communications, but by a consideration of the conditions under which, in the case of the Channel Tunnel, the new route would compete with those already in existence.

64. In this competition the Tunnel route would have the advantage which must always belong to through carriage by railway over carriage partly by land and partly by sea, with the inseparable inconveniences of trans-shipment, break of bulk and terminal expenses. Those advantages, however, which must in all cases be considerable, can never be so great as in a case in which, as in that now before us, the mixed route is one of which the sea portion is short and the railway portion long in proportion to the whole length of the distance traversed. In the case of a mixed route, where the converse is true, that is, where the longer portion is by sea, and the shorter by rail, the cheapness of the water carriage over the longer distance affords some compensation for the expense and inconvenience of trans-shipment, &c., at each end. Where, on the other hand, as in the case of the conveyance of goods from an inland manufacturing town in England to their destination on the Continent, of the total distance traversed only a small part is by sea, no such compensation is forthcoming. It follows that the removal of the necessity for trans-shipment, &c., is relatively far more advantageous in the latter than in the former case, and should, in the

latter case, have the effect of enabling the relieved route to compete upon favourable terms, not only with those routes with which it was able to compete successfully before, but with other routes extending over a much larger area.

65. The relief of the Channel route from the hindrances which, as we have said, operate so disadvantageously to the commerce which makes use of it, is likely to have this result.

66. In this view we have to take into account the extent of that traffic which Mr. Giffen appropriately describes as the "short ferry traffic" between England and the Continent, in the case of which, owing to the shortness of the distance between the English and the Continental ports, the expenses of trans-shipment and break of bulk are not compensated by cheap conveyance over a long mileage by sea.

67. The amount of this traffic is shown in tables which Mr. Giffen has prepared with the object of illustrating the trade between France, Germany, Belgium, and Holland on the one side, and the ports of London, Harwich, Rochester, Dover, Folkestone, Newhaven, Littlehampton, Southampton, and Weymouth.

68. We find that of the total imports to the United Kingdom from those countries, £72,500,000, or about three-quarters, are to these ports.

69. Of the total exports to the United Kingdom from these four countries, £48,500,000, or one-half, are from these ports. Of these exports, £16,000,000 represent British and Irish, and £32,500,000 foreign and colonial products, out of a total of £38,000,000 of foreign and colonial products exported to the four countries. The shipping movements of these ports with the four countries show entries to the extent of nearly 4,000,000 tons, and clearances to the extent of 3,000,000 tons.

70. The tables printed in the Appendix specify the different articles imported and exported at each of the ports in question.

71. Of the trade shown by the above figures as following the short ferry route across the Channel, there is every reason for expecting that a large share would pass through the Tunnel. In all cases except the comparatively insignificant number where the destination of the goods happened to be the seaport at which they were landed, two trans-shipments would be avoided, and, as we have already pointed out, the shortness of the present water transit offers no compensation for its expense and inconvenience. It is remarkable that of the wool now sent from London to France, about half is at present carried by rail from London to the Channel ports.

72. We desire to insist particularly upon the importance, in the interests of the large depôt trade carried on by this country, of neglecting no opportunity which may present itself for the improvement of our trade communications. The figures which we have given show how large a part of the foreign and colonial produce which we import is re-exported to Germany, Holland, Belgium, and

France, and that of this a large part follows the short sea route. The evidence which we have received shows that this trade is threatened by the increase of business at places like Antwerp, Havre, and Rotterdam, which are able to receive and distribute directly goods destined to the Continent. The fact that the chief manufacturing places on the Continent with which our business in the distribution of raw material is carried on are situated inland, would render it possible for direct railway carriage from this country to compete under favourable conditions with railway carriage between the same places and the Continental ports.

73. We are led at this point to the consideration of the effects which the opening of a Tunnel under the English Channel might produce upon our security as a nation.

74. Our examination of this part of the subject has been much facilitated by a study of the memoranda and evidence printed in the Blue Book, entitled "Correspondence with reference to the proposed Construction of a Channel Tunnel." Among these papers we may refer specially to the Report of the Military Committee presided over by Sir A. Alison, and to the minutes of His Royal Highness the Commander-in-Chief, and of Lord Wolseley.

75. These papers contain a very full statement of the military arguments. We have, however, thought it desirable to afford the writers an opportunity of further explaining their views, and of submitting themselves to examination with regard to the data upon which they had founded their conclusions, and we have supplemented their evidence by that of other distinguished officers.

76. We share with the military witnesses their opinion that the existence of a Tunnel under the Channel would in some respects modify the conditions under which the defence of this country would have to be undertaken, and that special precautions would be necessary in order to prevent the possibility of its falling into the hands of an enemy. We agree with them in believing that its possession, either during the progress of operations or during an occupation of English soil, would be highly advantageous to the invading force, and possibly disastrous to the invaded nation. Such a force holding both ends of the Tunnel would have a secure line of communications by means of which it could be safely and easily provided with supplies and reinforcements; these, without a Tunnel, could be conveyed by sea only, subject to all the risks of transport across the Channel and attack from the English navy.

77. We are, therefore, ready to concede that if it can be shown that no means could be devised upon which reliance could be placed for preventing a Tunnel once made from passing into the hands of an enemy, its formation would be in the highest degree objectionable.

78. We have, therefore, to consider whether the capture of the Tunnel by an enemy is a contingency so probable as to justify us in recommending that its construction be forbidden by Parliament.

79. We avail ourselves of this opportunity for expressing the reluctance which, as civilians, we feel to express our own opinions, and especially to criticise those of high military authorities, in regard to matters affecting the defences of the country. We cannot, however, divest ourselves of the responsibility which Parliament has thrown upon us in entrusting us with this inquiry. It is, moreover, our duty to point out, and upon this we shall have more to say presently, that of the considerations on which those military authorities have relied in arriving at their conclusions, many are far from being of an exclusively technical or military character. Some of them, indeed, are purely political, and upon these, at any rate, we conceive that we need have no scruple in expressing the opinions which we have been able to form. In other cases, again, the statements originally put forward have been so far qualified or limited by the subsequent evidence of the witness as to deprive them of much of their significance and weight.

80. We have already admitted that the existence of the Tunnel would to some extent alter the conditions under which this country would have to be defended against attack. It follows, and, to the best of our belief, no one has disputed the conclusion, that steps must be taken with the object of removing the risk which, if no such steps were to be taken, the presence of the Tunnel would involve.

81. This question has been so thoroughly dealt with by the Military Committee, presided over by Sir A. Alison, to which its investigation was entrusted last year, that it is not necessary for us to do more than recapitulate the principal recommendations of their Report. The evidence which we have taken in connection with this branch of the inquiry leads us to believe that those recommendations are regarded by the military authorities as embodying the most effectual measures which military and engineering science is able to suggest for the purpose of securing the Tunnel.

82. We will therefore assume that in accordance with the suggestions of the Committee, arrangements have been made:

(1) For protecting the mouth of the Tunnel by means of a portcullis or other defensible barrier.

We desire to invite attention to the suggestion made by Sir F. Bramwell for the defence of the terminal station at the English end of the Tunnel by means of massive sliding gates connected by interlocking machinery, the machinery to be so arranged that both gates could never be opened at the same time.

(2) For interrupting the ventilation of the Tunnel, and thereby rendering its air irrespirable.

(3) For closing the land portion of the Tunnel by pouring shingle into it at one or more places specially provided for the purpose.

(4) For the temporary demolition of the land portion of the Tunnel by mines, or by fixing charges of explosives.

(5) For partially flooding the Tunnel by opening of sluice valves or by the use of explosives.

(6) For the complete destruction of the Tunnel by the admission of the sea.

With regard to the last, we observe that several of the witnesses whom we have examined have expressed themselves incredulous as to the possibility of effecting such a breach in the roof or walls of the Tunnel as would have the effect of permanently disabling it. We have, however, ascertained that the members of the Military Committee thoroughly considered this question, and we have obtained from Sir F. Abel and Colonel Majendie, the two members of the Committee who were specially consulted upon these points, a clear expression of their opinion that by the use of explosives the Tunnel might be disabled to such an extent that its restoration would be an operation not less serious than the construction of a new Tunnel.

83. We further assume that, in accordance with the recommendations of the Military Committee, the Tunnel has been made to emerge in the immediate vicinity of a suitable fortress, and that the arrangements to be used for its obstruction are to be controlled from different points situated within the works of that fortress, as well as from other points at a distance from it.

84. The character and extent of the additions which would be requisite in order to bring the works now in existence at Dover up to the strength necessary under the altered circumstances which would be present, are matters upon which we cannot undertake to report in detail. These must be determined upon the responsibility of her Majesty's Government, aided by their professional advisers. His Royal Highness the Commander-in-Chief has pointed out to us that it would be impossible for these to give an opinion until the precise position of the Tunnel and its exit has been determined.

85. We observe that upon these points, and particularly with regard to the strength of the garrison which would be necessary, there is some discrepancy in the opinions of the military witnesses.

86. Thus His Royal Highness the Commander-in-Chief states that the force at Dover should always be of a minimum strength of from 8,000 to 10,000 men.

87. Sir A. Clarke, Inspector General of Fortifications, would wish the peace garrison of Dover, which now numbers about 3,000 men, to be increased to 6,000, but adds that he considers that increase desirable, "Tunnel or no Tunnel." This witness considers that a redistribution of troops would provide the extra 3,000 necessary.

88. Sir Lintorn Simmons believes that an extra garrison of 10,000 men would be required.

89. General Lord Wolseley is of opinion that the present garrison should be raised to a strength of from 10,000 to 12,000 men.

90. We understand that the accommodation now in existence at

Dover is sufficient for 3,000, and that in time of war a force of from 6,000 to 8,000 men would probably be placed within the works.

91. With regard to the possibility of strengthening the Dover force upon an emergency, we may mention that the distances by rail between Dover and other places where troops are, are the following:—

	Miles.	*ch.*
Dover to Canterbury	16	34
,, Chatham	43	75
,, Woolwich	67	42
,, London	76	46
,, Shorncliffe	7	27
,, Aldershot	95	22

92. We have now to examine *seriatim* the principal apprehensions for the safety of the Tunnel which have been expressed before us. These are to the effect that it might pass into the hands of an enemy—

(1) By surprise, effected through the Tunnel itself;
(2) By surprise, effected by a force landed in the neighbourhood of the Tunnel, with or without the aid of troops passed through the Tunnel;
(3) By surprise, facilitated by treachery;
(4) After investment by an invading force;
(5) By cession as the condition of the disastrous peace.

93. We desire to call especial attention to the fact that it is assumed, and notably by Lord Wolseley in his published Memorandum, that the danger to be apprehended from a *coup de main* of the kind suggested in (1), (2), and (3), would be greatest at a time when this country was in a state of profound peace with all the world, including the Power by which the supposed *coup de main* might be struck. "The seizing of the Tunnel by a *coup de main* is, in my opinion," says his lordship, "a very simple operation, *provided it be done without any previous warning or intimation whatever* by those who wish to invade the country." Speaking of the risk of surprise from a force sent through the Tunnel, the same writer (Mem. p. 282) says: "My contention is, that were a Tunnel made, England, as a nation, could be destroyed *without any warning whatever, when Europe was in a condition of profound peace* . . . . . the whole plan is based upon the assumption of its being carried out *during a time of profound peace between the two nations*, and whilst we were enjoying life in the security and unsuspicion of a fool's paradise."

94. We gather from Lord Wolseley's evidence before this Committee, that it is far from his lordship's intention to suggest by the above expression that there is a greater probability of this country being treacherously attacked during a time of the profoundest peace, than at a moment when our foreign relations might be such as to require more than ordinary vigilance. It is, however, undoubtedly the opinion of Lord Wolseley, and of others who have addressed

themselves to the study of this question, that a treacherous attack directed against us by an apparently friendly power, at a moment when all the political circumstances were such as to disarm the suspicions of the political and military authorities, is the particular form of danger which it is, most of all, our duty to anticipate, as one of the results of the opening of a submarine route between England and the Continent.

95. In support of this view a paper, with which we have been supplied, has been prepared by the direction of His Royal Highness the Commander-in-Chief in the Intelligence Branch of the War Department. That paper has for its title "Hostilities without Declaration of War," and the writer has undertaken to show by a review of over a hundred cases, selected from the history of this and the last century, that hostilities between European Powers have, with rare exceptions, commenced without previous declarations of war. That this has been the case, in so far as hostile acts have been committed by land or by sea without the formal announcement that peaceful relations were to be considered at an end, we do not doubt. There is, however, a wide distinction between acts of hostility committed without a formal declaration of war, and such acts committed under circumstances rendering it impossible for the Power attacked to foresee the danger which threatened it. An examination of the Paper referred to will show that in the large majority of the cases referred to in the Paper of the Intelligence Department, hostilities, though not preceded by formal warning addressed to the Power against which they are directed, nevertheless took place at times when, owing to international complications, the continuance of a state of peace could not have been expected. The cases selected by Lord Wolseley for the purpose of illustrating his argument do not appear to bear it out. These were :—1st. The seizure in 1807 of the Danish Fleet at Copenhagen; 2nd. The capture in 1804 of four Spanish frigates; 3rd. The sudden and unexpected outbreak in 1870 of the Franco-German War.

1st. The Danish Fleet was, it is true, seized without a previous Declaration of War; a proceeding due to and justified by the discovery by the English Government of the Secret Article in the Treaty of Tilsit, by which the Navy of Denmark had been put at the disposal of France; an act, which, it is needless to say, constituted an alliance with our enemies, and which the Danish King and Government must have known to be tantamount to a Declaration of War, with all its consequences, for which they ought to have been prepared.

2nd. The seizure of the Spanish frigates was made (in accordance with a practice which was frequent in the 18th century, and was supported by jurists of all countries) on the eve of a war with France, felt to be inevitable, and in which Spain, by her treaty engagements with France, would be necessarily involved; and was, in fact, the sequel of a long and angry diplomatic correspondence, during which Spain was making active preparations for a maritime war.

3rd. The Franco-German War broke out with unexpected rapidity, but not so suddenly that either party possessing a single weak point, like the Channel Tunnel, would not have had ample time to place all its defences in working order.

96. We do not take the view that the contingency of a *coup de main* struck by a Power with whom our relations had been friendly and unstrained, is one which we have any right, or which experience would justify us in placing amongst the foremost of the probabilities with which we have to deal. It is our impression, on the contrary, that, if such an attack were to be made, it would be preceded by circumstances which would have called for effectual precautions against surprise. We observe with pleasure that this view is that apparently entertained by His Royal Highness the Commander-in-Chief, and by Sir Lintorn Simmons.

97. We are glad to learn from the whole of the military witnesses who have come before us that, if such precautions were in existence, the risk of a successful surprise would be extremely remote. That this would be so, whether the attempt were made by means of a force sent through the Tunnel, or by one landed in its vicinity, there can be little doubt. A small body of men emerging from the mouth of the Tunnel in the face of the concentrated fire of the forts by which it would be commanded, and of the superior force by which it would unquestionably be encountered, if its arrival were expected, could scarcely escape annihilation.

98. Thus Lord Wolseley says that, if sufficient notice were to be given, "Fifty men at the entrance of the Tunnel can prevent an army of 100,000 men coming through it."

99. Sir A. Alison, referring to the probability of an attack through the Tunnel, says that he thinks such an attack "ought to be very easily met;" and adds, "if there was any alarm at all, or any strainedness of relations, the precautions to be taken to meet it are so very simple, that I am not inclined to fear it as much as I know many military men of great experience do."

100. Nor would a like attempt on the part of a moderate-sized force, suddenly landed in or near Dover, if such an attempt were foreseen by the defenders, probably be less unsuccessful.

101. Sir A. Alison, questioned upon the prospects with which such an attempt might be made, says, "It is only in time of peace that it could be done without a formal declaration of war, and when it is not expected."

102. Lord Wolseley, asked whether he had any apprehension as to the result of an attempt of the same kind made at a time when we were at war, and when consequently the force to whom the defence of Dover was committed would be in daily or hourly expectation of hostilities, replied that, "With a garrison at Dover of 10,000 or 12,000, commanded by a well-selected general, a surprise would be a very improbable event."

103. His Royal Highness the Commander-in-Chief, asked whether he would anticipate much danger from the Tunnel in time of actual war, replies, "I should think the danger from the Tunnel is before any war breaks out; that is the point where I consider there is the greatest risk."

104. The military evidence indeed points throughout to the conclusion that the risk from a *coup de main*, unless struck in time of the profoundest peace, would be scarcely appreciable. We have already expressed our opinion with regard to the probability of an attack of this kind being made under such political conditions. It is, however, desirable, before we leave this part of the subject, to examine the prospects with which a *coup de main* might be attempted, even upon the assumption that the attempt took place when we had no reason whatever for anticipating it, and when the political sky was absolutely clear.

105. If the *coup de main* were struck through the Tunnel the invaders would have to be entrained without attracting attention, and sent through the Tunnel without such a disturbance of the ordinary traffic, as might awaken suspicion on our side. They would have to debouch from the Tunnel in sufficient numbers, and with sufficient rapidity, to enable them to possess themselves at once, and simultaneously, of the different works commanding the exit of the Tunnel. They would have to hold the exit and these works against any attempt which might be made to recapture them. Finally, unless we are to assume the failure of the whole of the arrangements suggested for closing the Tunnel in case of need, they would have to possess themselves at once of all the points from which those arrangements would be controlled, at the risk of finding the Tunnel obstructed in their rear, and their retreat hopelessly cut off before reinforcements or supplies could possibly reach them.

106. This being so, we are not surprised to learn from his Royal Highness the Commander-in-Chief that in his opinion if there is any risk from a *coup de main* "it is seaward that there is the danger; not the Tunnel as a means of attack."

107. With regard to the possibility of seizing the English end of the Tunnel by means of a small force landed in its neighbourhood, we have endeavoured to ascertain precisely the conditions, of which the presence would be indispensable if such an attempt were to have any chance of success. Those conditions would, we understand, be the following:—

(1.) It would be necessary that the invading force should be despatched with absolute secrecy.

(2.) That it should cross the Channel unobserved and unmolested by our fleet.

(3.) That the state of the weather should offer no difficulties to the disembarcation.

(4.) That its landing should be effected without hindrance.

(5.) That it should advance without molestation from the point at which it might be landed to the works by which the exit of the Tunnel would be protected.

(6) That it should find the garrison in a state of absolute unpreparedness.

(7) That it should succeed in carrying by a simultaneous rush the whole of the various works surrounding the exit of the Tunnel.

(8) That this capture should be effected so rapidly as to render it impossible for the defenders of those works to have recourse to any of the means which would be in existence for the purpose of closing or destroying the Tunnel, *or*, that the whole of those means should simultaneously chance to be out of working order.

108. That every one of these conditions should be present at the same time it appears to us most improbable. We can well conceive that, with the rapid communications now available for the movement of troops by land or sea, a force such as that contemplated might be collected and despatched, and possibly reach our coasts without warning. That its landing, formation, and forward movement could altogether escape detection we can scarcely conceive. It would, we learn from Admiral Rice, take 12 hours, even under the most favourable conditions, and assuming the landing to be unresisted, to land 20,000 men, the force contemplated by Sir Lintorn Simmons. Such a force could not, however, in Admiral Rice's opinion, be landed without attracting attention. A smaller body could, of course, be landed with greater rapidity, but the diminution of its numbers would not increase its chance of success. A force of 1,000 men could, Sir Cooper Key informs us, be landed under favourable circumstances in an hour; "the larger the number of men," however, this witness adds, "the more the difficulties that would arise against the time, but I have no hesitation in saying, that if they were equipped for it, with boats properly prepared, and a good clear beach, they could land 10,000 men under ten hours."

109. That such a force, or one approaching to it in strength, should be able to traverse without detection or hindrance, the distance intervening between the point of landing and the exit of the Tunnel, which, unless the recommendations of the Military Committee are altogether disregarded, would be at a considerable distance from the shore, appears to us difficult to conceive; were it to be detected, and the alarm given, the complete surprise of the garrisons of the different forts would no longer be possible.

110. The apprehension of Lord Wolseley, is, however, not that the invading force should be landed on the coast to the east or the west of Dover; upon which we understand that the nearest points available for a landing are at a distance of several miles from the town, but that a force much smaller than that supposed by Sir L. Simmons, and probably numbering not more than 3,000, might arrive at night at Dover itself. The anticipated operations of such a force are graphically described by Lord Wolseley in his evidence, from which the following extracts are taken. The landing might, his lordship supposes, have taken place at Dover Pier.

4946. What distance would the force have to traverse before it got to the works?—There are no works at Dover, distant from the quay, more than a mile and a-half or two miles; I never calculated the exact number of yards.

4947. At any rate that distance, which is probably something of that kind, would have to be traversed?—That distance would have to be traversed.

4948. And its course lies through the town of Dover?—Its course lies through all the various parts of the town of Dover.

4949. At this moment you suppose that a force so landed would first awaken the alarm of somebody or other at Dover?—If the surprise were properly carried out, I do not see how anybody is to know anything about its taking place; if it is carried out on a dark or a rainy night, I do not see how anybody is to know anything about it before you actually walk up to the barrack gate and ask the sentry to let you in.

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4951. You assume, not that the works are carried by what you have called a short siege, but a sudden rush?—By surprise. If you had to resort to a siege, and you had the means of blowing up the Tunnel, of course you could blow it up.

4952. With regard to the works, we civilians cannot tell what works might or might not be erected in order to protect the Tunnel, but at this moment there are works, are there not, upon either side of the town of Dover?—Yes, on either side of the valley.

4953. What is your idea; that a force landed in the way which you have suggested would carry the whole of those works, or only that it should devote itself entirely to the works upon one side of the valley?—I should think they ought to carry all the works.

4954. Fort Burgoyne on one side and the Citadel on the other?—Fort Burgoyne on one side, and the Citadel on the other, and the Western Heights. I forget the names of the various forts; there are about four principal works in Dover, as well as I remember.

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4963. Then no alarm would be given by the appearance of 6,000 or 7,000 men through the streets of Dover in the dead of the night?—I was talking of 3,000 men, but if you take it up to 6,000 men, they would not march in one column, but march in many different directions towards the defence works which they had to attack; and if proper precautions had been taken beforehand by the general or the commander who had to devise such a scheme for the surprise of the place, under those circumstances it would be utterly impossible for any alarm to be given to the garrisons of the different works about to be attacked. It is quite possible that people, for instance, the policemen, and the coastguardsmen on the quay, would be knocked down, very likely bayoneted, or made prisoners, and you may call that giving an alarm; or they might be perceived landing by a small number of people, and it is possible that on the route from the quay, or from the place of disembarcation, to the various points to be attacked, individuals might come out in the dead of the night for some reason, or they might look out of the windows and see the men marching past; but if proper precautions be taken, as they would be in case of a surprise being planned and devised by a man who knew his work, I think it would be impossible for any news to reach the different points about to be attacked.

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5233. I think you said that supposing anyone in this room were to go to the barrack gates, and to knock at the door, the door would at once be opened?—The wicket would be opened to you.

5234. Would it be the case if a person who went there had 100 men in his company?—The man inside would not know that he had them; he would never suspect 100 men being outside; but I would go further and say, even supposing that he would not open the barrack gates, the barrack gates are very easily knocked in.

5235. Are there any drawbridges there?—There are, but they are very seldom, if ever, drawn up in Dover.

5236. You said that if the Tunnel were in existence, it would be necessary

that the conditions of life in Dover should be altered; would that be one of the conditions which would be altered?—Yes.

5237. And the drawbridges would be up at night?—The drawbridges would be up at night, and nobody would be allowed to go in or out after a certain hour.

111. The following extracts from the evidence of Sir Patrick Macdougall show that the precautions which might be necessary in order to guard effectually against a nocturnal surprise, would be of the simplest character:—

5288. In the greater part of the evidence you have given, you have contemplated the case of sufficient notice having reached the defensive force to occupy the lines which you say command the mouth of the Tunnel, and even to bring up troops, but the most dangerous contingency that has been suggested is a sudden surprise before those operations could be effected; can you not conceive a sudden surprise of that kind before due notice could be given of the attack?—No, I cannot.

5289. It has been suggested that there might be nothing to prevent, even after the works considered necessary for the defence of the Tunnel had been completed, a small force landing in the dead of the night at the pier of Dover, and portions of that force reaching each of the fortresses simultaneously, and occupying each of them without material difficulty; can you conceive of that taking place?—No, I cannot conceive of its taking place unless there was no garrison in the port, or that they were asleep.

5290. At any time in the night, I presume, when no danger was immediately at hand, a large portion of the garrison would be asleep?—Yes.

5291. A certain portion would be on guard?—Yes.

5292. Now it has been supposed that a force, we will say of 1,000 men, would be despatched simultaneously to each of five or six fortresses, and would arrive at each fortress at the same time; that they would knock at the door, and be admitted, and would rush in and disarm the ten or twelve men who would be on guard; does that attempt appear to you to be a feasible one?—It might be feasible on the supposition that the drawbridges were down, and the wickets open, but not upon the supposition that the drawbridges were up.

5293. I presume if any summons came at night to the soldier on guard, he would endeavour to ascertain who it was; he would not open the door without some precaution?—Of course the supposition is, that the wicket is opened to admit a supposed friend, and then these people rush in; but that would be rendered impossible by the drawbridge being up, and if the drawbridge were up, 4,000 men could do nothing against a fort with a steep escarpment; they could not scale the walls.

5294. I presume that if Dover became, as it would become in the case of the Tunnel being made, a place of some importance, every possible precaution against a sudden rush of that sort would be taken?—I should suppose so.

5295. Can you conceive that those precautions might be made, not very expensive and perfectly certain of acting; precautions to prevent the fort being seized suddenly and without due notice, so as to rouse the garrison?—I do not think they could possibly surprise the fort if the drawbridge was up and the garrison within. I am supposing small garrisons, not a large division. I think garrisons of 500 men would be ample for these small detached forts. The forts now existing require larger garrisons in proportion to the small forts, but then they are constructed for a different purpose.

112. We desire to dwell in examining this part of the subject, not only upon the difficulties which the force by which a *coup de main* might be attempted would have to surmount before it could possess itself of the Tunnel and the protecting works, but also upon what appears to us to be the certainty, that even if it was successful in effecting its purpose to this extent, it would, under the arrangements advocated by the Military Committee, find the Tunnel disabled.

113. Of the measures enumerated in the Report of the Military Committee which, as we have pointed out, would produce results ranging between a temporary destruction of the Tunnel and its permanent annihilation, some would, we cannot doubt, have been resorted to from the moment that it became evident that an attack of any kind was impending. Those selected would, if the attack did not promise to be formidable in the first instance, effect a stoppage, which could be easily removed when the danger had ceased to exist. The flooding of the lowest lying portions of the Tunnel, the closing of the barriers at its entrance, the discontinuance of the means for supplying it with respirable air, would be sufficient for this purpose. A more formidable attack might be at once followed by the destruction of the ventilating machinery, or by the demolition of a considerable part of the land portion of the Tunnel by means of explosives.

114. By these means the Tunnel would be rendered useless for a period, the length of which would vary according as one or other of the above measures might be resorted to, during which a small force, even if it should have succeeded in possessing itself of the exit, and perhaps of an outwork in the immediate neighbourhood, could scarcely hope to hold its own against the forces which would be brought against it by land, and which, unless the command of the Channel had passed out of our hands, a contingency which we shall discuss hereafter, would threaten its communications by sea.

115. Should this be the case, it would follow, first, that the Tunnel itself would no longer be available for the objects which *ex hypothesi* rendered its possession desirable to the invaders; and secondly, that the invaders would find themselves in a position so critical as to be almost desperate.

116. Sir A. Alison states that in such a case the invading force would be in a position of greatest danger; it would be thrown forward at the risk of total destruction; if it failed it would be absolutely lost; and Lord Wolseley adds that it would be unnecessary for it to bring supplies, for the reason that, if it failed, it would not want any.

117. With regard to this contingency we observe that the military witnesses, while prepared to admit that the consequences which would follow from the timely destruction of the Tunnel under the circumstances which we have supposed, are generally apprehensive that the Tunnel would either not be closed at all, or would be closed too late, owing—

(1.) To the failure of the mechanical contrivances for closing, or
(2.) To the reluctance of the authorities, civil or military, to incur the responsibility of such a step.

118. We are quite ready to admit the unwisdom of placing implicit reliance, where great national interests are at stake, upon the absolute efficiency of any human appliances, particularly if it should be the case that those appliances are specially liable to failure from their complication, or from the materials upon which they

depend. In this view we are able to express our concurrence in the paragraph with which the Military Committee have concluded their Report, and which, considering the terms in which they were entrusted with their inquiry, they could not with propriety have omitted.

119. We share the opinion of the Military Committee, that it is impossible to eliminate the risk of failure "in every imaginable contingency," but we believe none the less that it is possible, by the exercise of an amount of care which, judging from the importance attached by the military authorities to these questions, we cannot doubt would be exercised, and by the multiplication of those defensive arrangements upon which the security of the Tunnel would depend, so far to minimise any risks which its existence might occasion as to place the occurrence of an appreciable danger beyond the range of those probabilities for which it would be our duty to provide.

120. In connection with this part of the inquiry we have obtained valuable evidence from Sir Frederick Abel, and from Colonel Majendie, Her Majesty's Chief Inspectors of Explosives.

121. The evidence of the former of these witnesses is to the effect that there are several methods by which the Tunnel could be flooded or otherwise obstructed without difficulty; that it might, if desired, be permanently disabled; that "a very simple system of inspection," such as is now exercised at our submarine mining stations, could be easily organised, and would have the effect of "guarding with almost absolute certainty," against risk arising from the deterioration of the appliances made use of. Those appliances are, Sir Frederick Abel admits, no doubt individually fallible, but their sufficient multiplication would reduce the chance of failure to "a very remote contingency." His decided view is that if it was desirable to utterly destroy the Tunnel, nothing but very gross and culpable negligence upon the part of those entrusted with its defences would prevent its destruction from being carried out.

122. Colonel Majendie states that "there are any number of ways of obstructing" the Tunnel; "there is no difficulty about that; if you have warning, and you want simply to close the Tunnel, or temporarily to disable it, or to deny it to an enemy, there could be no difficulty in multiplying means which would be perfectly effectual. . . . . I have no anxiety at all about that." With regard to the possibility of its permanent destruction, he expresses his belief that with "full time, full warning, and full means," there would be no difficulty in destroying it in various ways. He points out that there would be some risk of the mechanical arrangements getting out of order; he is apprehensive that those arrangements might not always be maintained in a high state of efficiency, and he adds that "there is always a risk of failure even in a thing which you imagine at the moment is all right." In answer to a subsequent question upon the same point, he observes—"I have always had very much before my mind the recommenda-

tion which our Committee made, that any means of destroying the Tunnel should be controlled not only from the central works of the fortress, but also from one or two distant places; and it is more with reference to those operations, when, if I may say so, the worst has come and the enemy are in possession of the Tunnel, and possibly of some of its defences, that then, when it is most necessary that the thing should act, I am somewhat apprehensive of failure." Such a failure would not, however, in Colonel Majendie's opinion, be irreparable so long as "we had control of the mine," and "access to the explosives," and if the defences of the Tunnel were sufficiently strong to guard against the possibility of sudden seizure, his fundamental anxiety disappears.

123. The evidence of these and other witnesses leads us to believe that by a multiplication of the arrangements for closing the Tunnel, by a proper selection of the places from which those arrangements would be controlled, and by the exercise of ordinary care in their maintenance and supervision, the risk of their failure might be reduced to such an extent as to justify us in assuming that such a failure would not, under any conceivable circumstances, be likely to occur.

124. The argument founded upon the assumed reluctance of the authorities, civil or military, to destroy or to interfere with a work so valuable as the Channel Tunnel, is one which we cannot admit to have the force attributed to it. It will be remembered that the means at their disposal would range from the mere closing of the mouth of the Tunnel by a temporary obstruction, up to its permanent destruction by the admission of the waters of the sea through an irreparable breach. The former of these precautions would suffice in the case of an attack by *coup de main;* we cannot believe that upon an emergency, believed by the military authorities to threaten the existence of the nation, it would not be resorted to. The latter could be reserved for the more serious contingency to which we shall presently refer.

125. With regard to the anticipation that the capture of the Tunnel might be facilitated by treachery, it is perhaps sufficient to observe that happily the records of this country afford little support for such a conjecture, and that if the existence of treachery be assumed, it would have to operate over an area so extensive as to render its success far from probable. The extent and number of the defences of the Tunnel would render the simultaneous betrayal of the whole difficult, even upon their assumption that their position and character had been previously made known to an enemy.

126. To sum up the results of this portion of our inquiry, we desire to state that the apprehensions which have been urged by most of the witnesses whose evidence we have had the advantage of hearing, appear to be founded upon the following assumptions:—

(1) A willingness on the part of the Power in possession of the French end of the Tunnel to attack this country treacherously, at a moment when our international relations could afford no indication of the imminence of such an attack.

(2) The passage and advance of an invading force, under circumstances which would enable it to elude notice from the time of its despatch up to the moment of its arrival at the Dover works.

(3) The simultaneous seizure by surprise of the whole of those works.

(4) The success of this enterprise with such rapidity and completeness as to render it impossible for the defenders to put into operation any of the manifold appliances for the destruction or temporary disabling of the Tunnel.

(5) The neglect, on the part of the military authorities, of all the most obvious precautions for the safety of a place which, according to their own representation, would be of cardinal importance to the security of the nation.

(6) The inopportune interference of the political authorities in a matter concerning the defences of the country.

The presence of most of these conditions, regarded separately, appears to us highly improbable. That the whole of them should concur, we believe to be so nearly inconceivable as to justify us in dismissing from our minds any apprehensions founded upon such an hypothesis.

127. The foregoing considerations have had reference mainly to that particular form of danger which we understood, from the evidence of His Royal Highness the Commander-in-Chief and the Adjutant-General to be chiefly feared by the military authorities.

128. It is, however, necessary to refer to another contingency; the possibility of the Tunnel falling into the hands of an enemy after the reduction of its defences, or after their cession, consequent upon a reverse or a series of reverses sustained in any part of the world by our arms. We fully recognize that, considering the extent of the British Empire, the responsibilities which we have incurred in different parts of the globe, the degree in which we depend upon our naval superiority for the protection of our national interests, the recent growth of foreign navies, and the impossibility of foreseeing the political combinations which may hereafter arise, or the effects of the discoveries of modern science as applied to warfare, we should not be justified in excluding from our contemplation the consequences which might result to this country, were it to sustain an overwhelming disaster after it had been united by a submarine communication with the Continent of Europe.

129. We are further bound to admit that the conditions under which a victorious enemy would enter upon the occupation of this country, or might impose terms of peace upon her if defeated, would be highly favourable to him, and unfavourable to us, if he should be either in actual possession of both ends of the Tunnel, or able to exact from us the cession of the English end.

130. It has been urged that in such an event his communications would be easy and almost indestructible, his fleet, instead of being engaged in protecting his communications, and in guarding the

conveyance of his supplies and reinforcements, would be at liberty to blockade our ports and molest our commerce; that he would be able at any moment to pour into this country large bodies of troops; that our difficulty in dislodging him would, under such circumstances, be infinitely greater than it would be were he to establish himself on English soil without the advantages which he would derive from the presence of the Tunnel. These sinister possibilities would, it is argued on the one hand, afford greatly increased temptations to an intending invader, and would, upon the other, lead to the recurrence of panics, to commercial and international susceptibilities, and consequently to augmented expenditure upon military objects, and ultimately to the introduction into this country of military service under the conditions prevalent upon the Continent of Europe.

131. We have given our careful attention to these grave considerations, and we should regret extremely to present the appearance of passing lightly over them. We are, however, in the first place, unable to share the anticipation that a victorious enemy would, after lengthened operations, either against the fortress of Dover, or against our forces in any other part of the world, find the Tunnel still available for his use. Under such circumstances there would obviously be ample time for its destruction. "If it is a question of siege," says Lord Wolseley, "whether there are contrivances or not beforehand for the destruction of the Tunnel, the officer commanding the garrison would improvise such means as to destroy the Tunnel during the siege."

132. We cannot bring ourselves to believe that if our fate as a nation depended upon the accomplishment of this, our rulers would refuse to give the necessary orders, or our military authorities to give effect to them. If we are right, it follows that the conquerors would not, in the event which we have supposed, obtain, and could not expect to obtain, in consequence of the construction of the Channel Tunnel, any advantages such as those which it is imagined that they will derive from its existence. The realisation of this will, we believe, go far to allay those fears, the recurrence of which has been so much apprehended by some of the witnesses.

133. We cannot, however, in reviewing this part of the argument against the construction of the Tunnel, abstain from pointing out that, if it be once granted that this country has sustained a reverse so overwhelming as to oblige her to submit to the terms of a peace dictated by a victorious enemy, the presence of the Tunnel, even if it were to remain intact, would not materially alter a position already assumed to be desperate.

134. It would, we conclude, be a condition precedent to such reverse, that we had entirely lost the control of the sea, and that our armies had sustained a crushing defeat. It might be fairly contended that, under such circumstances the victors being absolute masters of the English Channel, would be able to bring across it, without hindrance, whatever supplies and reinforcements they might

need for the subjection of this country. There would indeed, were our case so desperate as it is assumed to be, be nothing to prevent a victorious enemy from exacting the cession of the whole of our fleet and of our dockyards, and the demolition of our national defences, except such as he might himself retain. Finally, amongst the conditions imposed, it is conceivable that one might be the construction of the Tunnel at our expense, and its cession to the invaders.

135. We have now, however imperfectly, reviewed the chief arguments to which we have had the advantage of listening in regard to the military aspects of this question. We have, in the earlier part of our report, expressed our conviction that the commercial advantages likely to result from the opening of a Tunnel under the Channel are likely to be very considerable, and may probably far exceed the most sanguine expectations formed with regard to them. We are of opinion that a great industrial enterprise, offering a prospect so encouraging, should not be arrested except for conclusive reasons. We have given our reasons for believing that in the case of this enterprise the reasons urged for arresting it are not conclusive. In order to show sufficient cause for interference on the part of the State under such circumstances, it is, in our opinion, not enough to prove that circumstances can be conceived under which the existence of a Channel Tunnel might involve a more or less remote risk to the country, or that it is impracticable to devise precautions upon which absolute reliance might be placed "in every imaginable contingency." This is, however, all that has been done in the present instance by the opponents of the Tunnel project. They have, with much ingenuity, assumed the presence of every condition favourable to the view which they entertain, and the absence of every condition unfavourable to it, but they have not been able to show that there is the slightest prospect of the simultaneous presence of the whole of those favourable conditions, and unless this be assumed the whole argument founded upon them falls to the ground.

136. Holding these opinions, we have no course open to us except to recommend that this enterprise should not be prohibited on merely political grounds, and that it be allowed to proceed, subject to the ordinary Parliamentary examination by Committees.

137. The conditions under which that sanction ought to be given can scarcely be defined with precision until the details of the project are before the public.

138. The settlement of the defences is one which, as we have pointed out, cannot be effected until a particular scheme has been approved, and the situation of the English end of the Tunnel finally determined. The extent and character of those defences, the alterations of the works now in existence at Dover, the addition of new works, should any prove necessary, the equipment of those works, the strength of the garrison to be maintained in them, the character of the appliances for closing the Tunnel or for destroying

it, the precautions necessary in consequence of the increased importance of the fortress, all these must be determined by the Government in concert with its military advisers.

139. We desire, however, to express our opinion that the exit of the Tunnel and its approaches should be placed under the exclusive control of the military authorities.

140. It was, we observe, laid down as indispensable in the letter of the Secretary of State for War to the President of the Military Committee, dated 23rd February, 1882, that the first charge and maintenance of all necessary works would have to be defrayed by the owners of the Tunnel. It seems to us that of the extra expense which may be occasioned to the nation by the necessary addition to the strength of the works at Dover, the proprietors of the Tunnel may fairly be required to bear a part; but without further evidence as to the total expenditure required, we cannot take upon ourselves to make a specific recommendation on this head.

141. We received during the course of our inquiry from gentlemen representing both the schemes at present in existence assurances of their readiness to contribute, within reasonable limits, to the erection of any new works which may be needed.

142. We apprehend that, in accordance with the usual practice, the rates which the proprietors will be allowed to charge will be regulated beforehand. We consider that these should be fixed upon a scale calculated to induce the proprietors to look for a profit to a largely extended business upon terms attractive to the public rather than to a more restricted one with higher charges.

143. Special arrangements by convention will be necessary in order to secure facilities for through communication and reasonable through rates over other lines in connection with the Tunnel on this and on the other side of the Channel.

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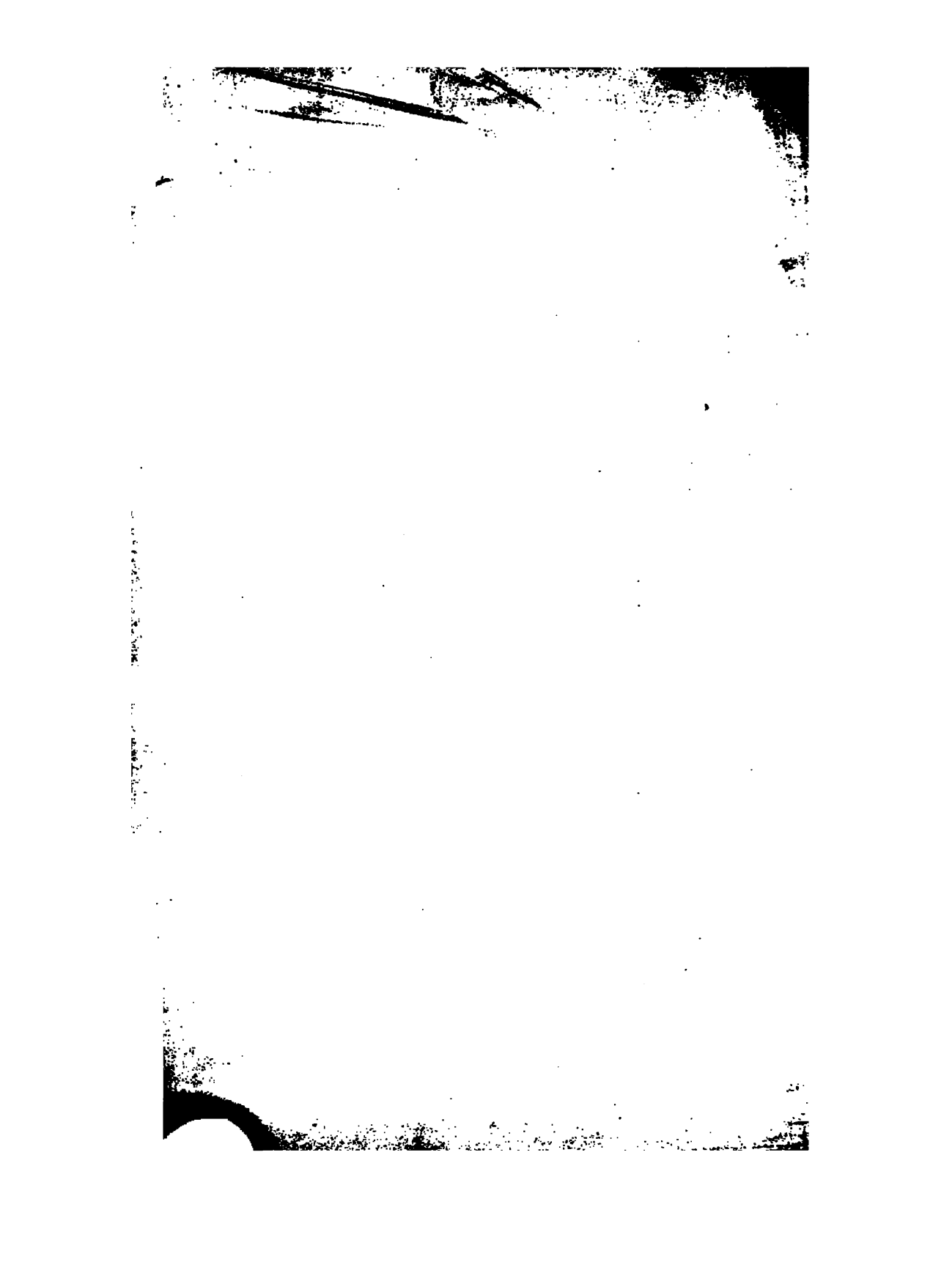

THE CHANNEL TUNNEL.

Extracts from a Lecture

DELIVERED BY

PROFESSOR LEONE LEVI, F.S.A., F.S.S.

DOCTOR OF POLITICAL ECONOMY OF THE UNIVERSITY OF TUBINGEN;
OF LINCOLN'S INN, BARRISTER-AT-LAW, &C., &C.

AT

KING'S COLLEGE, LONDON,

ON

British Policy with respect to the Suez Canal and the Channel Tunnel.

THURSDAY, 11th OCTOBER, 1883.

LONDON:
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1884

Extracts from a Lecture

DELIVERED BY

PROFESSOR LEONE LEVI,

AT

KING'S COLLEGE, LONDON.

British Influence on Public Works of an International Character.

It is much to be regretted that England should, from any cause, however reasonable or justifiable, be placed in a position of antagonism towards two international public works of special importance to British interests, and of still greater value to the world at large, viz., the Suez Canal and the Channel Tunnel. And we may specially lament that political considerations and unworthy sentiments of jealousy should have been, and be still, allowed in both cases to thwart, if possible, and, in any case, to retard works evidently intended, and well calculated to promote commerce and civilization. From her high position, from her extensive Colonies and Dependencies, from her enormous commerce and navigation, and more especially from her unbounded influence on the politics of the world, the voice of England is all powerful, and it is really sad, where any reason is given to other countries to assume or imagine, that in matters of an international character, England thinks for nobody but herself.

Responsibility incurred by thwarting or retarding Works of Public Utility.

There may, doubtless, be strong enough reasons to induce her to look askance towards enterprises of doubtful issue. She must form her own opinion as to the feasibility of any scheme, and as to the consequences it may involve. She is the best judge of what will injure or benefit her material interests. But any opposition offered under error of the real merits of the work

contemplated, or from purely political motives, is sure to be severely criticised, and will, in the end, weigh but lightly in the adoption or rejection of the proposal. What I intend to do this evening is to examine the ground which induced England to oppose, as long as she could, the construction of the Suez Canal, and the attitude which she has assumed towards the same this very year, as well as the reasons alleged for British opposition to the construction of the Channel Tunnel. What is the soundest policy for England to pursue with respect to these, and other similar international public works?

* * * * * * *

The Channel Tunnel.

Another work of an international canal is, however, under consideration at this moment, and on which British policy is by no means decided. It is the proposed submarine communication between England and France. Is it expedient that parliamentary sanction should be given to such a work? Whether it is possible or not to construct a tunnel under the Channel; whether, if constructed, the work is likely to prove profitable—these are questions which do not concern the British Government, but may safely be left with the companies who are prepared to assume full responsibility for the same; for, surely, they may be trusted with having well laid their scheme, and well seen to the safety of the investment. The question simply is, ought the British Government to permit or to hinder works of such a nature? What are the facts of the case? Here we have 36,000,000 persons on the British side of the Channel, and 92,000,000 on the other side, if we only include Belgium, Holland, Germany, and France, or if we add America to the British side, and the rest of Europe to the other side, an aggregate of 100,000,000 and 300,000,000, respectively, unable to meet one another, except by crossing a narrow channel almost always boisterous. Here we have a trade, between the United Kingdom and the continent of Europe, amounting in all to 278,000,000*l.*, or, including North America, 400,000,000*l.*, annually carried on under conditions of great uncertainty, in small ships, and through seven or eight ports utterly unfit for large vessels. Here we have a trade, consisting largely of perishable

commodities, such as fruit, fish, flowers, vegetables, or of fragile articles, such as pottery and glass, the lighter sorts of machinery, and the more delicate textile fabrics, many articles requiring careful packing, and of which the value is great in proportion to their bulk—articles which suffer from being long on board ship, and from being handed about from ship to rail, or from rail to ship. And a proposal is made, with sufficient guarantee for knowledge of facts, and *bonâ fide* of motives, whereby passengers and a large portion of produce and merchandise may henceforth travel or be carried on *terra firma*, over a continuous road, from any part of Britain, from John o' Groat, it may be, to any part of Europe, aye, far beyond, to and from other Continents. And all this to be undertaken at the expense and risk of a commercial company. Ought British policy to look askance at such proposal, or be hostile to the attempt, or should it not rather lend all its aid in the experiment?

Objections to the Channel Tunnel.

Yet military considerations, dictated partly by unnecessary and greatly exaggerated fears of invasion, and still more by a certain amount of vain pride in isolation, and a dislike of abandoning the natural defence of the waves and billows around these isles, have hitherto succeeded in inducing the British Government to assume a hostile position. And, wonder of wonder, even the Joint Select Committee of the House of Lords and the House of Commons, to whom the matter was referred,* came to the conclusion, by a majority, that it is not expedient that parliamentary sanction should be given to the submarine communication, though the majority could not agree upon the real reason for their opposition. The objectors to the Channel Tunnel seem to have based their reasoning upon the assumption of a possible willingness, on the part of the Power in possession of the French end of the tunnel, to attack this country, treacherously, at a moment when our international relations could afford no indication of the imminence of such attack. And working upon this assumption, they frightened the Committee with a long list of cases of hostilities, which occurred without

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* See Analysis of Report in the Appendix, p. 9.

declaration of war, within the last 200 years. How absurd does it seem to recall the surprise, by France, in peace, of Dutch fortresses in 1700; the attack by the Pope of a body of Imperial troops in 1708; the seizure by England, in peace, of forts in Swedish provinces in 1715; the entry of the Russian army in Poland, on the election of Stanislaus, and many like cases, without declaration of war, as a reason for stopping any further work on the Channel Tunnel. What possible analogy can there be between circumstances so remote and the present? How unreasonable, how utterly deceptive it is to build the opposition to the Channel Tunnel on the probability of the simultaneous occurrence of many conditions highly improbable individually, and still more so at one and the same time. Can this be sufficient to condemn the proposal? As the Marquess of Lansdowne said, "In order to show sufficient cause for interference on the part of the State, under such circumstances, it is not enough to prove that circumstances can be conceived, under which the existence of a channel tunnel might involve a more or less risk to the country, or that it is impracticable to devise precautions, upon which absolute reliance might be placed 'in every imaginable contingency.'" For my part, I cannot help regarding many of the opponents of the Channel Tunnel as purely obscurantists, who dread the approach of light—as national egotists, who disdain a closer contact with other nations—as enemies of peace, employed in scattering seeds of jealousy and fear. I am an ardent lover of peace and progress, and I hail every means intended to unite closer and closer the disjoined members of the human family. Are we to stop every measure of improvement for fear of contingencies which may never happen? It may be a new and untried condition of things for England to lose her insular character; and we may well allow that the new condition of solidarity with the Continent may impose new duties of caution and watchfulness, but is that a reason why the Channel Tunnel should be prohibited?

What is the best Policy to be pursued.

If I am asked what is the wisest policy for her Majesty's Government to pursue with respect to the Suez Canal, Channel Tunnel, or any other international works of that character, I

would answer, "Leave it alone." Let it stand or fall as a commercial adventure. Undertake no responsibility towards them. Abstain from all loans of public money to either a British or foreign company for commercial purposes; but neither hinder or restrain what may prove of immense utility to the nation or the world. If political danger be apprehended from the Channel Tunnel, by all means take proper precautions, impose any necessary conditions, or require any justifiable guarantees; but let no political firebrands succeed in placing the British Government at issue with works of civilization and progress.

Need of closer Communication with Europe.

The trade and social relations between England and Europe are greatly hindered by the Channel. Difference of production and industries offers a great incentive to communication and exchanges, but the sea interposes a formidable obstacle. It was not without much misgiving, that Venice consented to the abandonment of her insular position by knitting herself to the network of continental railways; yet she gained immensely by it. And I venture to say, that the United Kingdom will have no reason to regret her closer union with her sister nations beyond the Channel. A Tunnel between Calais and Dover would seem to produce a saving of only two hours in the journey between Paris and London; yet it is something to save thirty-five per cent of the time now expended on it. Nay, more, the six hours and a-half of continuous, uninterrupted journey from Charing Cross to St. Lazare, will be quite different from the eight hours and a-half now employed, with the inconvenience of descending from the train, going on board a steamer, submitting oneself to all the disagreeableness of sea-sickness, and returning to the train to complete the journey well shattered and out of order. It is a singular fact, that whilst the French Railways convey, annually, about 4,000 passengers for every 1,000 of the population of France, and the British Railways convey about 16,000 passengers for every 1,000 of the population of the United Kingdom, the steamers, plying between the French and British ports, convey, annually, only about four passengers for every 1,000 of the population of both countries. In sober truth, the Channel helps to produce a moral chasm, more prejudicial far than any

physical obstacle to the intercourse between England and France; for failing to understand one another, neither cares to have much to do with the other. Other obstacles have, alas, interfered. Political jealousies, erroneous views of commercial policy, a needless diversity in the money, weights and measures, all have helped to keep us asunder. But I believe, that foremost among the causes of estrangement, has been the dreaded Channel.

Our Trade with Europe.

In the present position of British commerce and manufacture, we cannot afford to neglect any means which may tend to open new and fruitful markets in any part of the world. It is well, doubtless, to be able to supply the cheapest and coarsest goods to the millions of Asia and Africa. But it is still more important to cultivate our commercial relations with the richest and most civilized State in the world, our nearest neighbour and our greatest competitor, and be able to meet the close rivalry of France, Germany, Belgium and Italy in the choicest merchandise, all the more so, since high tariffs, an increasing productive power, and altered conditions as regards capital and labour, have, to some extent interfered with our wonted trade.

What portions do the different parts of the world take respectively of the exports of the United Kingdom? Divide the exports of British and Irish produce and manufacture geographically, within the last forty-two years, and the results are as follows:—

Exports of British Produce and Manufactures.*

(Amount in Million Pounds).

Countries in—	1840. Amount. £	1840. Per cent.	1850. Amount. £	1850. Per cent.	1860. Amount. £	1860. Per cent.	1870. Amount. £	1870. Per cent.	1882. Amount. £	1882. Per cent.
Europe	21.3	41	26.5	37	49.0	36	80.1	40	88.8	37
Asia	7.4	13	10.6	15	27.4	19	36.6	18	43.8	18
Africa	1.4	5	2.6	5	6.9	7	13.4	8	12.5	5
America ..	19.1	37	28.9	40	42.6	30	57.5	29	68.8	29
Australia ..	2.1	4	2.7	3	10.0	8	10.0	5	27.6	11
	51.3	100	71.3	100	135.9	100	197.6	100	241.5	100

* For details up to 1878, see my "History of British Commerce." Second Edition. (John Murray.) 1880.

It is no small matter, that at the present moment, upwards of a third of the British exports finds its way to European countries. Compare, however, the amount of such exports to the population of the different parts of the world, as far indeed as these can be ascertained, and what do we find? Africa, with a population of some 200,000,000, takes British produce at the rate of about one shilling per head. Asia, with a population of some 600,000,000, takes British produce at the rate of about one shilling and fourpence per head. And Europe, with a population of about 300,000,000, takes British produce at the rate of five shillings and eightpence per head. True, America, including, as she does, the United States and British America, mostly of the British race, with a population of some eighty millions, takes British goods at the rate of seventeen shillings and threepence per head; and Australia, nearly altogether British, with a population of less than two millions, takes British goods at the rate of as much as £12 : 10*s.* per head. But among purely foreign countries, the Europeans are doubtless the largest consumers of British produce and manufactures, and will be still more so as facilities of communication and wealth increase on both sides of the Channel.

Beneficial Effects of the Channel Tunnel.

To my mind, the construction of the Channel Tunnel will be attended with many decided benefits. It will strengthen the ties between England and the Continent of Europe. It will remove that sentiment of fear and jealousy for our neighbours, which has ever been a barrier to a true alliance. It will enable an immensely larger number of Europeans to visit this country, of which they have as yet, in most cases, an imperfect, if not quite a distorted, idea. By means of the Tunnel we shall be enabled to obtain fruit, flowers, vegetables, and other food supplies in much greater abundance and fresh from the fields of France and Italy. And in return we shall be able to supply continental markets with British goods with greater speed and certainty—elements not less essential than cheapness in cost. A closer affinity with the Continent may not be all gain to England. Continental life is less austere and somewhat more

frivolous than the British. The political system of continental states seems more liable to changes and reversals. There is much in the genius of the Frenchman, the Italian, or Spaniard, that differs essentially from the genius of an Englishman or a Scotchman. But when all is admitted, and all allowance is made for a certain angularity of character, there is much in common among us all which is sure to be improved by greater admixture, and we may be quite certain that the benefit likely to accrue will far excel any possible injury.

Geologists tell us, that ages ago, Britain formed part of the Continent of Europe, and that one of those commotions of nature, which often changed the face of the world, once and for ever, segregated the British Isles from all the rest. Science and enterprise now come to repair the breach. Shall we refuse their aid? Provident nature designed our union. A volcanic agency broke it asunder. Why not endeavour to restore the link? Instead of fearing a closer connection between England and the Continent, let us anticipate it with delight, convinced that such connection is founded upon the best principles of human nature and the most enlightened principles of public policy. In this age of big thoughts, and great works, when mathematicians and physicists, astronomers and geologists, are placing before our eyes a vista of endless progress, we cannot say how soon the wonder of to-day may be eclipsed by the greater wonder of to-morrow; nevertheless we may safely predict that the name of M. de Lesseps will ever be associated with a work of remarkable engineering prowess, and that whosoever shall succeed in constructing the Channel Tunnel will earn a high place on the scroll of fame, and be entitled to the gratitude of the world.

APPENDIX.

CONCLUSION OF THE DRAFT REPORT,

Prepared by the MARQUESS OF LANSDOWNE, *Chairman of the Joint Select Committee of the House of Lords and the House of Commons on the Channel Tunnel.*

"WE have, in the earlier part of our Report, expressed our conviction *that the commercial advantages likely to result from the opening of a Tunnel under the Channel are likely to be very considerable, and may probably far exceed the most sanguine expectations formed with regard to them.* We are also of opinion that a great industrial enterprise, offering a prospect so encouraging, should not be arrested except for conclusive reasons. We have given our reasons for believing that, in the case of this enterprise, the reasons urged for arresting it are not conclusive. . . . Holding these opinions, we have no course open to us, except to recommend that this enterprise should not be prohibited on merely political grounds, and that it be allowed to proceed, subject to the ordinary examinations by committees."

Four members of the Joint Select Committee voted for the Marquess of Lansdowne's (Chairman's) Report in favour of the scheme, viz., the Chairman, Lord Aberdare, Mr. Baxter, and Mr. Arthur Peel. Against it were Sir Massey Lopes, Sir Henry Hussey Vivian, Lord Shute, Earl of Devon, Earl of Camperdown, and Mr. Harcourt. For Lord Shute's Draft Report there were five in favour and five against, the Earl of Camperdown voting against it. For Sir Henry Hussey Vivian's Draft Report the numbers were again five and five, the Earl of Camperdown voting against it. Likewise for Sir Massey Lopes's Draft Report the numbers were five and five, the Earl of Camperdown voting against it. The Draft Reports prepared by the Earl of Camperdown, Mr. Harcourt, and the Earl of Devon, were by leave withdrawn. And the result was the Report that

"The Committee have had under consideration the several Draft Reports which have been laid before them, but it has been found that no one of the said Draft Reports receives the entire approval of the majority of the Committee.

"The majority of the Committee are, however, of opinion that it is not expedient that Parliamentary sanction should be given to a submarine communication between England and France."

CHANNEL TUNNEL.

REPORT OF PROCEEDINGS

AT THE

ORDINARY AND EXTRAORDINARY

GENERAL MEETINGS

OF THE MEMBERS OF THE

Submarine Continental Railway Company,

LIMITED,

HELD AT THE

BOARD ROOM OF THE SOUTH EASTERN RAILWAY COMPANY,

LONDON BRIDGE STATION,

ON

WEDNESDAY, DECEMBER 23rd, 1885,

SIR EDWARD WILLIAM WATKIN, Bart., M.P., in the Chair:

AND ON

THURSDAY, JANUARY 14th, 1886,

The Right Hon. G. A. F. CAVENDISH-BENTINCK, M.P., in the Chair.

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THE

Submarine Continental Railway Company

LIMITED.

Report of Proceedings at the Ordinary and Extraordinary General Meetings of the Members of the Submarine Continental Railway Company, Limited, held in the Board Room of the South Eastern Railway Company, London Bridge Station, on Wednesday, December 23rd, 1885.

SIR E. W. WATKIN, BART., M.P., presided.

THE CHAIRMAN in opening the proceedings said: Gentlemen, I will ask the Secretary to read the advertisement calling the Meeting.

The SECRETARY (Mr. John Shaw) having read the notice,

The CHAIRMAN said: I suppose you will wish me to take the Report of the Directors and Statement of Accounts transmitted to each Shareholder as read. If so, I have to move—

> "That the Report of the Directors and Statement of Accounts to the 30th of June, 1885, together with a Supplementary Account to the 31st of October, 1885, be received and adopted."

Now, gentlemen, the Report tells you that the works of the Tunnel, which, as you know, have proceeded to an extent of about 2,200 yards under the Channel from the mouth of the shaft in the direction of France, have stood without any perishing or sign of any decay or giving way during the three

years of idleness which the Right Hon. Joseph Chamberlain, in accordance, I suppose, with his views of the interests of civilization, imposed upon us. I really do think it would be desirable, if you would allow me to spend £20 on one of Mr. Willing's inscription plates, and put it at the mouth of the Tunnel, so that everyone could read it, and the inscription I should propose to put upon it would be: "These great International works, begun in the interests of civilization, were stopped by the Right Hon. Joseph Chamberlain, then President of the Board of Trade, on such a day of such a year." I think it would be a very instructive thing to ear-mark the fact, that the man who professes to be the great leader of progress in this country had interfered to prevent the progress of works purely experimental, which were eminently calculated, apart from other considerations, to promote practical science, and which, I believe, had received the approbation and consent of some of the best, the most learned, and most astute of mankind. If, however, Mr. Chamberlain takes that view, which apparently he does, there are many associations of men all over our country who have from time to time (and similar bodies continue these expressions) stated to us that they consider their cordial support is due to this Board and to the Shareholders in endeavouring still further to prosecute the enterprise. There is a body of men who do not make much noise, but who are none the less thoroughly useful and important: I mean the Association of Permanent Way Inspectors. They are practical men, who have risen, most of them, from the position of workmen engaged in the labour of maintaining permanent way and works, and who have risen by their own merits, to be the directors of labour. I do not know myself a more practical body of men more likely to take a sound view of any question affecting public works, not only as affecting the construction or maintenance of them, but, also, the effect of the works on the progress of mankind and the interests of civilization. Now, we have received a copy of resolutions from that Association, which, I think, are rather remarkable, and, with your permission, I will read them. The resolutions are dated June, 1885. They are resolutions arrived at by a

conference of this Association, held at Manchester in 1885 They say :—

> " 1st Resolved.—That the members of this institution do hereby desire to express themselves earnestly in favour of the construction of a Channel Tunnel between England and France, believing that it will increase the ties of sympathy and interest between the English and French people, and make wars almost impossible between them; that it will advance their civilization and intercourse, and the development of their commerce, the prosperity of the railways, and the employment of the working classes of the two countries and of Europe."

They go on secondly :—

> " 2nd Resolved.—That the members of this institution, who are employed upon works of railway construction and maintenance, desire to express their entire confidence in the energy and ability of the eminent engineers and promoters of the Channel Tunnel Railway to successfully construct it, and afterwards to maintain it as a highway for international communication, and also as a concern for the profitable investment of capital."

I think those are remarkable resolutions, and I think you and I will unite in endorsing every word of those gentlemen. Well, we tell you in the Report, also, that we have erected on the cliff overlooking the shaft of our Tunnel a sort of Observatory, on which we can put, at the right time, an electric light; and when the French Tunnel Company have erected a similar tower, then the light at the North Foreland, the light of our tower, and that on the French tower, will enable the engineers to lay out scientifically and exactly the course of the permanent Tunnel. The only other matter that I need trouble you with—and I hope you will entirely approve it—is our proposition that you should spend a little more money in testing the opinion of the new Parliament on this subject. I cannot believe, if household suffrage is worth anything, and if the men who have been elected to this Parliament desire to be and to remain in peace and amity with our nearest neighbour, France—I cannot believe that the new Parliament will follow the lead of Mr. Chamberlain on this subject. Be that as it may, we shall test the feeling of Parliament if you permit us to deposit the Bill which we speak of.

On looking at the expense account you will find that, in the fifteen months which are covered by the Statement of Accounts, we spent between £2,000 and £3,000 partly in the construction of our tower, but largely in keeping the Tunnel in such a condition of drainage and ventilation as would enable us at any time to take parties of scientific and other persons down to see the wonderful results which have been obtained. We applied to Mr. Chamberlain, just before the late Government went out of office, to permit us to extend our heading to the other end of Shakespeare Cliff, where we have a shaft. We sunk a shaft there, and put up pumping and other machinery; and what we asked Mr. Chamberlain to sanction was, by a comparatively short extension of our present Tunnel in the direction of the land, to get a complete air current between the two shafts, one at each end of Shakespeare Tunnel. That we thought would enable us to economize, as we should have a natural draught instead of having to pump air from time to time into the Tunnel. That application was, however, without any reason being given, refused.

Now, during the past few months our engineer, Mr. Brady, has been applied to on behalf of the military authorities to lay down pipes from the western end of our Tunnel to the end of the Dover Pier, with a view to use compressed air for the working of the 81-ton gun which is there. I do not know how far the application of the compressed air has been successful, but the pipes have been laid down, and there is a power placed at the disposal of the military authorities which may be useful in moving the great turret and the great gun at the end of the pier. I think I have nothing more to say except that for myself I am quite as confident and hopeful with regard to this question as I ever was. We have proved that the old site on the English side of the Channel for the embouchment of the Tunnel, namely, St. Margaret's Bay, was a mistake. That has been admitted by the promoters of the original enterprise—if it can be called the original one—by the abandonment of St. Margaret's Bay and the adoption of a site at Fan Hole, as it is

called, on the eastern side of Dover. We have proved by excavations and works conducted under the charge of our engineers, that if a Tunnel was to find its way into English territory at that point, that first of all it would drain all the wells of the country on the one side and be drowned by the sea on the other. Therefore, having tried all these proposals, we came back to our original idea, namely, that there is a strip of country about three miles long where and where only a successful Tunnel can be pierced in connection with the English coast; and the conditions are, first, that within that short circuit of distance the grey chalk comes near to the surface and crops out, and our plan has been to find out the grey chalk and to follow it. We have proved that there is no site applicable except that which belongs to you. We are the owners of the three miles of that coast and the foreshore rights, though, no doubt, Mr. Chamberlain did dispute our rights, and, no doubt, the law courts will settle that—sometime. Then our position is this: We have sunk a shaft and driven a tunnel for 2,200 yards under the sea, and we have shown that the stratum is exactly what we want, and with regard to the very small leakages which the Report directs your attention to, we find one after the other that those leakages of fresh water run themselves dry. It, therefore, comes to this: The water is not sea water but fresh water what we have had to contend with—a few quarts or gallons of water, hitherto a very small quantity—indeed, that small leakage of water is the simple oozing out of water imprisoned in the cracks of the chalk, which may have been there, for what we know, for millions of years. That is a very interesting geological fact, but it all tends to show more and more strongly as time goes on that we have got into the right stratum, that that stratum will stand on its own legs, and that every little leakage of imprisoned water runs away and leaves a perfectly dry surface. We have shown how this work can be done, we have got reliable facts which bear on the question of what it will cost to do it, and our own experience throws further

light on the question of how long it will take to do it. Opposed to us we have a certain amount of English prejudice, but English prejudice melts away gradually like snow before the sun, and you may depend upon it that some morning you will, if you keep your property, as I intend to do mine, awake and find that this is hailed as a great work, and I hope the pecuniary results will not be disappointing. I have now to move:—

> "That the Report of the Directors and Statement of Accounts to the 30th of June, 1885, together with a Supplementary Account to the 31st of October, 1885, be received and adopted."

The Right Hon. Lord HOTHFIELD: I second that.

The CHAIRMAN: Mr. Fenton reminds me to state, before any gentleman rises to speak—and if any gentleman wishes to speak we shall be glad to hear him—that there is a very important article by Colonel Hozier going to appear in the *United Service Gazette* on this matter, and I think that it will give an excellent summary of the military arguments *pro* and *con*, and that it will tend to help on our question. You are quite aware that though one of our great military authorities on this side has been very much afraid of people invading our country through the Tunnel, another military authority—and, perhaps, as great a one, Von Moltke—says that one might as well talk of invading England through his library door. If no Shareholder wishes to speak I will now ask those in favour of the resolution which I have moved, and which Lord Hothfield has seconded, to kindly hold up their hands. Those of a contrary opinion? That is carried unanimously. Now I have to move:—

> "That the Right Hon. Lord Hothfield and William Mewburn, Esq., be re-elected Directors of the Company."

The Right Hon. G. A. F. CAVENDISH BENTINCK, M.P.: I second that.

The CHAIRMAN put the motion, and having declared it carried, said, I now propose—

> "That Henri Josse, Esq., and Colonel J. J. Mellor be appointed Auditors of the Company for the ensuing year, and that their remuneration be £25 each."

We thought it desirable to have an auditor in England and an auditor residing in France. We have a considerable number of Shareholders in France still, including our old and staunch friend Baron d'Erlanger.

The Right Hon. Lord HOTHFIELD: I second the motion.

The CHAIRMAN put it, and it was carried. Continuing, he said: We will now, if you please, consider ourselves an Extraordinary General Meeting, and I have to propose:—

> "That a Bill introduced in the present Session of Parliament, intituled 'A Bill to authorize the South Eastern Railway Company, and the Submarine Continental Railway Company (Limited), either alone or jointly with other companies, to maintain and continue experimental works for a Tunnel beneath the Straits of Dover, and for other purposes,' be and the same is hereby approved."

Colonel Beaumont, will you second that and give us a few words?

Colonel BEAUMONT: I am sure there can only be one opinion among us as to the very able manner, under very great difficulties, in which these works have been prosecuted by the Chairman. I think he has put before you most fairly and fully all that under existing circumstances can be said on the condition in which the works now find themselves. The one stumbling block, up to the present time, has been, in my opinion, the fact that proper publication or full publication has not been given to the real military aspect of the question. There is no doubt whatever that so far as the civil powers go, the fullest possible elucidation as to the practicability of the enterprise has been given, and for that you are indebted to Sir Edward Watkin, the Chairman of this Company. But it is the military question, and the military

question alone, which has stopped these works, and I cannot help thinking, as has been pointed out, that it is only a question of further explanation and of quiet and calm consideration of the whole circumstances of the case—the arguments *pro* and *con*—that will be necessary in order for us to wake up, as the Chairman has said, one fine morning and find a complete change of opinion. It is not one of those questions which can be forced on the public. It is one that must be wormed into their mind by proper explanations, and by the fullest possible information to be given by those who are competent to form an opinion upon it. I was therefore particularly glad to hear what the Chairman has said, that Colonel Hozier was writing an article on it. I beg to second the approval of the Bill, and I feel quite certain that the proper course to be taken is that which has been taken, namely, to keep on "pegging away" till at length success will crown our efforts.

The CHAIRMAN: I shall be glad to hear any Shareholder who wishes to speak. If not, I will put the resolution. Those in favour of the Bill for presentation to Parliament will signify the same in the usual manner. To the contrary? Carried. That is carried, and that is all we have to bring before you.

Colonel BEAUMONT: Before we finish I wish to propose a vote of thanks, which I am sure will be carried unanimously, and after the few words I have said before in recognition of the services of our worthy Chairman, you will guess the resolution I am asking you to pass, which is, that you will give a vote of thanks to the Chairman for his conduct in the Chair to-day and the explanation he has given to us; but more than that, for the steps he is taking, and has always taken, to bring this great question to a successful termination. I am sure it could not be in more able and energetic hands than those of the Chairman, and I have to propose a vote of thanks to him.

A SHAREHOLDER: I have great pleasure in seconding that.

Colonel BEAUMONT: It has been proposed and seconded that a vote of thanks be given to Sir Edward Watkin for his conduct in the Chair to-day, and for his past services in connection with this matter. As many as are of that opinion will signify the same in the usual manner. To the contrary? Carried unanimously.

The CHAIRMAN: Gentlemen, I am exceedingly obliged to you for the vote you have just arrived at, but I must entirely disavow any exclusive merit for my exertions, such as they have been, in favour of this enterprise. We have had a very able and influential body of Directors, and also able engineers and officers, and I think perhaps to them more than to myself any thanks which are due should be paid. I am exceedingly obliged to you for your kindness.

[The proceedings then terminated.]

THE

Submarine Continental Railway Company

LIMITED.

Report of Proceedings at an Extraordinary General Meeting of the Members of the Submarine Continental Railway Company, Limited, held in the Board Room of the South Eastern Railway Company, London Bridge Station, on Thursday, January 14th, 1886.

RIGHT HON. G. A. F. CAVENDISH-BENTINCK, M.P., presided.

THE SECRETARY (Mr. John Shaw) read the Advertisement convening the Meeting.

The CHAIRMAN: Gentlemen, at very short notice I have been called upon to occupy the chair this day in the place of Sir Edward Watkin, who is unavoidably detained on urgent business elsewhere. His absence, however, is, perhaps, not of much importance, because, I have to remind you, this is merely a formal meeting, held according to law, to carry into effect the resolution passed on the previous occasion—namely, the 23rd of December last. But indeed, gentlemen, even supposing this was anything but a formal meeting, I do not think there would be anything to add to the observations which were made to you the other day by Sir Edward Watkin, inasmuch as no fact of any importance has transpired since that period. I have therefore, gentlemen, occupying this chair in the place of the Chair-

man of the Company, to propose to you a Resolution in the following terms :—

> "That the following Resolution passed at a Special Meeting of Members of the Submarine Continental Railway Company, Limited, held on the 23rd December, 1885, be now confirmed.
>
> "That a Bill introduced in the present Session of Parliament, intituled 'A Bill to authorize the South Eastern Railway Company and the Submarine Continental Railway Company, Limited, either alone or jointly with other Companies, to maintain and continue Experimental Works for a Tunnel beneath the Straits of Dover, and for other purposes,' be and the same is hereby approved."

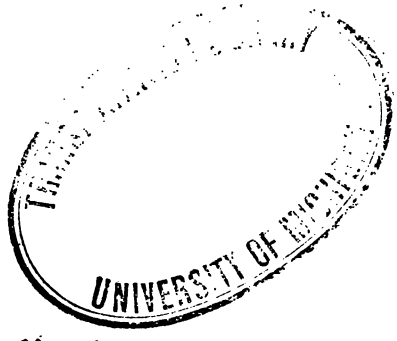
Mr. J. M. GRANT: I will second the resolution.

The CHAIRMAN: That is seconded, and I have, therefore, to ask those in favour of the resolution to kindly hold up their hands. On the contrary. Carried unanimously.

The proceedings then terminated.

THE

CHANNEL TUNNEL.



Report of Meeting

HELD AT

ST. JAMES'S HALL, PICCADILLY,

25th MAY, 1888.

London:
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1888.

The Channel Tunnel.

At a Meeting held at St. James's Hall, Piccadilly, on the 25th May, 1888 (Mr. Myles Fenton in the Chair), a Paper was read by Mr. E. Drury, entitled: "Charing Cross to Constantinople," in connection with the completion of the railway between Sofia and that capital.

MR. DRURY, in the course of his lecture, stated that he attached enormous importance to direct communication being established between England and the East by means of the Channel Tunnel.

MR. LEWIS APPLETON moved the following Resolution:—

> "That in the opinion of the meeting a tunnel between "England and France had become absolutely neces- "sary in the interests of trade and commerce, as, by "the establishing of through communication by rail "between the United Kingdom and the European "lines, this country would be enabled more success- "fully to compete with foreign ports, which now "possess the means of transporting merchandise with- "out break of bulk to all parts of the Continent."

MR. APPLETON said the question of the Channel Tunnel, which had been referred to by the lecturer, was beyond the arena of political controversy.

It arose superior to party and faction and the selfish interests of stockbrokers, promoters, and engineers. They

could take care of themselves, but it was a question of far greater and wider-reaching importance, viz., of a national and of an international character, affecting the trade, commerce, industry, and the prosperity and peace of all the nations of Europe; and yet, strange to say, this great international scheme, with such far-reaching interests, was opposed. History repeats itself. It was so when the great project of Railways was first submitted to public opinion, a project which has done more for the wealth and prosperity of Russia and for all other nations than anything else yet adopted. It was so with the Suez Canal, which was opposed persistently and relentlessly by no other than the late Lord Palmerston, supported by a powerful party at that day; but who now living was not ashamed of that opposition, both as regards Railways and the Suez Canal, and so it would be found in a few years to come, or to quote the words of Mr. Bright, "that in twenty years to come, the party who are now opposing this great international scheme will be astonished if not ashamed of themselves."

After entering at some length into the history of the Channel Tunnel enterprise, he concluded by observing that no one could measure the immense advantages which would result if this scheme were carried out. It was impossible to imagine the value to the trade and intercourse of Great Britain with Europe by the construction of twenty miles of railway. If the construction of the Tay Bridge, of the Severn Tunnel, of the Thames Tunnel, and of the Mersey Tunnel, had been of such great value, both commercially and financially to the railways and the people who traded, what would be the immense advantages occurring by a communication between England and France, as proposed by this Tunnel. It was said in opposition to this scheme, that the danger of war, if the tunnel were

made, would be greater than existed now. On the contrary, the speaker believed war would be prevented, and peace would be more thoroughly secured by the opening of such a connection between the two nations.

MR. EDMUND KIMBER, in seconding it, said that he rose thus early to support the Resolution, because he saw Mr. Merritt contemplated moving an Amendment. In the first place, he would observe that from the map before the Meeting, it would appear that a line drawn straight from Munich to Belgrade, instead of going round by Vienna, would further shorten the route from Calais to Constantinople. There might be, however, physical and commercial difficulties in the way of that, upon which some of the engineers and merchants present would probably be better authorities than himself. The learned lecturer had told them a good deal about the Turkish ceremonies at Vranja and Salonica, on the opening of the new line, the other day. He had dilated upon their superstitious rites and tedious and obstructive delays. But, doubtless, the Turkish priests acted up to the best of their light and knowledge, and the other officials did not have the advantages of scientific and technical education which were enjoyed in this country. However much they may have erred from ignorance, and sloth, and bigotry, had we no such Turks in this country? Were there none at the Horse Guards? Who were those learned and scientific military gentlemen who gave evidence against the Channel Tunnel before a Parliamentary Committee? They could not be said not to have known better. They had plenty of light and knowledge, and yet they were against it and condemned a scheme which would bring peace, plenty and prosperity to both the English and French nations. What business was it of ours or anybody's to oppose a

noble undertaking of this character if public spirited gentlemen were willing to come forward and spend their money in what they believed would be a public good? The opposition is monstrous. We had no right to oppose it. When he first read the evidence of Lord Wolseley and the Duke of Cambridge, of whom he desired to speak with the greatest respect, he asked himself whether he was an Englishman? Whether he still lived in England, the country of the brave and the free? Whether we had lost any of our ancient courage or pugnacity? On what conceivable grounds could "the highest military authority" come to the conclusion that the tunnel would require fortifying? How was it—and here he should say that he could not exactly find out from the recent debate in the House of Lords who the "highest military authority" was—the Duke said he was not, and Lord Wolseley would not admit that he was. How was it, he asked, that it was assumed by the Horse Guards that 100,000 men might land on our shores? Lord Wolseley forgot the existence of the South Eastern Railway, the London Brighton and South Coast Railway, and the London Chatham and Dover Railway, which, in times past, in less than twenty-four hours, had carried over 60,000 volunteers to the South Coast. Yet the public of England were taught to believe that they must wait to be attacked instead of attacking first. All the navies of the world combined could not land 100,000 men, or even 50,000 men on our shores, even if they were not obstructed by our ships. If Lord Wolseley argued that they might, could we not with very much greater reason argue that we might do the same to France or any other country? Why should England reverse her warlike policy in the past and wait to be attacked? They never had waited, and he hoped they never would. If the French could capture the north end of the Tunnel, England could capture the south much

more easily. But an ounce of dynamite, or a shock of electricity, would answer the purpose, and many of the electricians there to-night could easily show the Horse Guards how. He did not hope to convince Mr. Merritt or his two illustrious colleagues, the Duke of Cambridge and Lord Wolseley. Doubtless he felt it an honour to be in such noble company. A friend of his from Paris came to him shortly after these "colleagues" had given their evidence. He was a Frenchman, and said he had enjoyed a hearty laugh over what Lord Wolseley had said. It had caused, he said, the name of an Englishman to be despised on the Continent. He came to consult him about railways in Algeria, and he confessed he felt not a little humiliated. The absolute nonsense that was now being talked about the defenceless state of the country would humiliate the country still more. He had occasion, some months ago, in the Society, to enter into some military calculations, and if he recollected rightly, the figures came out at 600,000 men as the number of volunteers who had been through the different Metropolitan Corps since 1859, when the volunteer movement began. Where were all these men? Were they all dead? By no means. At any moment London alone could turn out 200,000 men well armed and equipped. Both physique, pugnacity and public spirit had increased since 1859, and while the conscripts of the continent were forced military labour, Englishmen at all times sprang to their feet, body and soul, and put into active service at least double the bodily strength and three times the fervour of the average foreign soldier. To talk of the Tunnel weakening our military position was all moonshine. The present Channel was a barrier to commerce and friendly intercourse with other nations which ought to be surmounted. If it were opposed, what would the Indians think, for

whom we are constructing railway works quite as expensive and wonderful? What would they think of our civilization and intelligence? What would the Burmese think of us? What would the Malays think of us? What would the Dutch of Java and Sumatra think of us? What would the Australians think of us? Yet all these great nations, though far distant, would be benefited by the tunnel. They came many thousands of miles by rail overland, and by sea in our magnificent ships, only to be transferred at Calais to some petty cock-boats whose discomfort is a perfect torture to an Oriental, and whose arrangements were enough to expose too severely to the weather many of our Anglo-Indian fellow-countrymen, who, after having spent their best years in India, returned to this country jaded, fatigued, and worn out. We were angry at the delay and dilatoriness of the Turks, and yet we ought to be ashamed of ourselves—with all our light, knowledge, and resources—for not having made the Tunnel long ago, and also a line of railway from Constantinople, through Asia Minor, Persia, Beloochistan, India, Burmah, Malay, Sumatra, and Java, whereby we ought easily to be able to get from London to the South of Australia in three weeks.

MR. W. R. MERRITT then proposed an amendment:—

> "That in the opinion of the meeting the Channel Tunnel "was unnecessary."

Which was seconded by Mr. Cornish, of Australia.

GENERAL BRINE, R.E., stated that General Wolseley, from a military point of view, was of a biassed opinion, and referred to Lieut.-General Sir Andrew Clarke and Sir John Adye, as higher authorities, who were in favour of the Tunnel.

MR. LEFEVRE (President of the Balloon Society) was of opinion that the military scare should not be taken into consideration, and he referred to the growth of the trades of foreign ports, such as Hâvre and Antwerp.

DR. PERKINS, of New York, remarked: A few years ago, when spending a few weeks in Canada, he observed workmen on the Grand Trunk Railway, driving a spike, such as used to hold the rails in place, into every tie, a few inches inside the left-hand rail. One Saturday night the trains ceased to run, and Monday morning found one rail moved and the gauge narrower throughout the entire length of the road, from Portland to the Detroit River. Why all this trouble and expense necessarily incurred in changing the gauge of the track and all the trucks of this great Corporation? The gauge had been made wider than the "Standard Gauge" in the United States; so that the transfer of freight from Western Roads to the Grand Trunk, which had become (and must be still more in the future) an important factor in its business, could not be accomplished without *breaking bulk*. Competition had become so great that the Road could not carry Western freight to the Atlantic seaboard at a profit, and pay the expense of re-handling. Hence the change! The Erie Road (the only extra-broad gauge road in the United States) was forced to do the same. All the great rail-road systems of America had been made or reconstructed with reference to this *most vital point*—the transportation of freight *without breaking bulk*. Expensive bridges and tunnels had been constructed to attain this end, and circular tracks are laid around cities, as in Boston, for the purpose of transferring freight to and from the different roads whose termini are at opposite points. The expense of *one* re-handling is oftentimes

sufficient to prohibit the transportation of, or even commercial transactions in, goods—enough to give a fair profit to the merchant or carrier.

For this reason alone (and other valid ones had been stated by the eloquent gentleman who had preceded him), the Channel Tunnel scheme should receive the support and co-operation of all, as a most important, and, indeed, essential means of promoting the commercial interests of Great Britain with the Continent. He most heartily indorsed the resolution.

MR. MYLES FENTON, before putting the resolution, complimented Mr. Drury upon his very able and interesting paper in reference to the route to Salonica and to Constantinople. He was much impressed with Mr. Drury's observations with regard to the necessity of continuity of communication without change of carriage or break of bulk. He read the following extracts from the leading article in the *Times*, of the 23rd inst., on the subject of the opening of the line to Constantinople:—

> "The travelling public has just received an instalment of a boon
> "for which it has been looking and longing for a dozen
> "years. As organic bodies breathe through their pores, so
> "the civilised modern world requires railways to breathe
> "by. It wants them in its separate districts and in systems.
> "A break in their continuity disturbs the circulation of its
> "blood. Turkey has hitherto interposed such a check that
> "Europe could journey by train to the boundaries of the
> "Ottoman Empire and its dependencies and no further.
> "With the assistance of the Black Sea and steam packets
> "Constantinople was brought into connection, more or less,
> "by land, with Western and Central Europe. Still Europe
> "sighed and gasped for immediate and through communica-
> "tion by land. Constantinople is not an island. It is not
> "in Asia. It is a European city, and Europe cannot respire
> "freely until Constantinople is put in touch with the general
> "railway system of the Continent. In each direction a gap
> "has for years left the travellers stranded. There is still
> "a voyage, and the Ægean can be as boisterous as the

> "Black Sea. The announcement not long since that the "missing railway link by land—wholly by land—between "Constantinople and Vienna was definitely approaching "completion, fluttered every tourist heart in Europe. The "travelling community was promised the privilege of "reaching Constantinople in 43 hours from Vienna without "regard to the caprices of winds and waves."

Unfortunately, the *Times* had for some time past been adverse to the Channel Tunnel, although he (Mr. Fenton) believed it was supported by the *Times* when the project was first mooted. The writer of the article, however, it appeared to him, had unconsciously been advocating the cause of the Channel Tunnel. Could any words be stronger in favour of the continuity of Railways? If it is desirable to place Constantinople in direct communication with the general Railway system of the Continent, *a fortiori*, how much more important it is to this country to be placed in that position. The Ægean, no doubt, may cause some discomfort to travellers, but it certainly cannot be worse in its effects than the vicissitudes of the Channel between England and France. Why should numberless Englishmen be prevented visiting Europe, and the thousands of persons who would gladly visit England be prevented doing so by the horrors of the Channel passage, when they could be so easily avoided by the Tunnel? He had frequently to cross the Channel, and, although not a bad sailor, he sympathised very much with those who, from necessity, had to cross, and he could not understand why passengers should be subjected to so much inconvenience and suffering simply from a sentimental objection on the part of some military authorities. He called attention to the progress of the trades of the ports of Antwerp and Hâvre as against those of Liverpool and London, and referred to a table which he had prepared, and which appeared in a *brochure* entitled "Under the Deep, Deep Sea," by Dr.

Griffiths. It appeared from this statement that whilst the Liverpool imports had increased only 10 per cent. and the exports only 5 per cent. in 11 years, the Antwerp imports had increased 40 per cent. and the exports 41½ per cent. in the same period. This he attributed entirely to the fact that Antwerp had direct communication by railway, without break of bulk, with the entire Continent; and he was convinced that unless we had the same continuity established by Railway we should be unable to compete with foreign countries, and would gradually lose that command of the American and other trades which was so great a source of wealth to this country. The cost of one transhipment alone was quite sufficient to induce traders to prefer one port to the other. Dr. Perkins had given an example of the disadvantage of break of bulk on the American lines, but we had an equally strong example at home. The Great Western Railway Company found it was absolutely necessary for their existence as a main line of railway, to add the narrow gauge to the broad gauge, so as to place themselves in through communication with all the joining railways. Mr. Drury in his paper had stated that the difficulties with regard to the Turkish Government having been overcome, the through railway to Constantinople would shortly be opened for traffic. He (Mr. Fenton) had no doubt whatever that within a very few years the line would be extended from Constantinople, to join the Indian Railway system at Kurrachee or some other point. What would be the position of Great Britain then? Whilst every other Continental nation, whether friendly or hostile, would be in direct communication by Railway with India, England alone would be isolated from her British possessions in India. Was this a desirable condition of things, when Russia is making such enormous strides in order to obtain access by Railway through Afghanistan to India? There was another very

important feature which he would like to say a few words upon, and that was with regard to the false position in which we had placed ourselves with the French people. Many years ago a treaty was completed between the two Governments laying down the conditions upon which the Channel Tunnel could be completed. One half of the work was to be done by the English Company, and the other half by the French Company. On the faith of this treaty the French Company have spent a very large sum of money, and now find that their works are stopped, and the only reason we can give them is that we are afraid that they will attack us through the Tunnel. Could anything be more pusillanimous, than that Englishmen, who boast of having conquered almost the entire world, should have to confess to the French people that they fear that the whole of our army and navy would be unable to resist an attack of a French army sent through 25 miles of tunnel? He had very frequently to go over to Paris, and to do business with Mr. Léon Say and other distinguished Frenchmen, and he was bound to say that whenever he met these gentlemen, who were interested in the French Channel Tunnel works, he felt ashamed of himself and his country. He ridiculed the idea that nature had provided the silver streak to separate us from the Continent. Nature originally connected England with the Continent. Had not nature provided the Isthmuses of Suez and Panama, and the barriers of Mont Cenis and St. Gothard? The engineers of this country have for all time been endeavouring to remove the so-called natural barriers, and establish inter-communication between peoples. The traffic through the Mont Cenis and St. Gothard Tunnels is enormous, and far exceeds the anticipations of the promoters, but it has never been for a moment suggested that the Italians were afraid of the French, or the French of the Italians, although it was well known

that considerable political jealously existed between the two nations. The French have never suggested they were afraid of us. It appeared to him that whilst other nations were progressing, England remained at a standstill. The Belgians were expending large sums upon their ports, and so were the French at Calais, Boulogne, and elsewhere; whilst on the English coast nothing whatever was being done, and he felt convinced that unless the Channel Tunnel was speedily completed we should very soon find ourselves behind in the race of commercial progress. The previous speaker questioned whether the Channel Tunnel would pay? This, it appeared to him was not the question at the moment. If a certain number of persons, English and French, were prepared to embark their money in the venture, it did not appear to him that the British public need object if the enterprise proved, as it was sure to do, of great public advantage. The construction of the Tunnel was easy, and could be completed at the very moderate cost of one-half or one-third of the cost of the Manchester Ship Canal. There was no doubt that the prejudice against the Channel Tunnel arose from a want of knowledge of the subject. The commercial value of the work was undisputed, and the only objection raised against it was that it would be impossible for the army and navy to defend it. All he had to say upon this point was, that commerce is the foundation of the wealth of England, that the wealth of England establishes her position amongst the nations of the world, and that if commerce requires, as it does, the construction of a Tunnel between England and France, it is the duty of the British Government to protect that Tunnel. He trusted that once more we should see England in the van of progress and enterprise, and that this great work, which would bring honor to its promoters and wealth to the country, would rapidly be completed.

MR. FENTON then put the Resolution, which was carried with only three or four dissentients.

The Resolution was subsequently forwarded by Mr. Appleton to Lord Derby, Mr. Gladstone, and Sir Edward Watkin, who replied as follows :—

"HAWARDEN CASTLE,
May 28*th*, 1888.

DEAR SIR,

I beg to acknowledge the receipt of your letter, and to say that I in no way share the alarms created in some minds by the project of a Channel Tunnel, which indeed appear to me to redound but little to the honor of the country.

Yours faithfully,
(Sd.) W. E. GLADSTONE."

"ST. JAMES'S SQUARE, S.W.,
May 28*th*, 1888.

SIR,

I thank you for your letter this day received. I agree personally in the Resolution, but I fear that prejudice and panic are too strong to allow of any present attempt to construct a tunnel under the Channel.

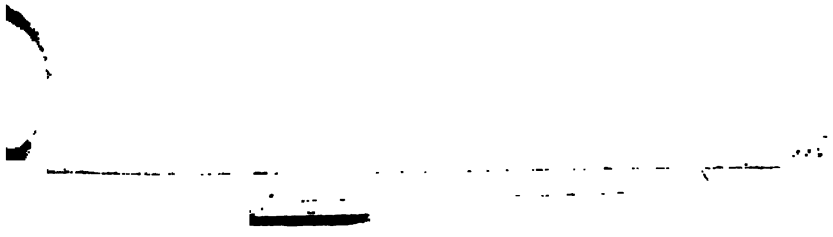
I remain,
Your obedient Servant,
(Sd.) DERBY"

"CHARING CROSS HOTEL,
May 29*th*, 1888.

MY DEAR SIR,

I am very much obliged for your kind letter and for the accompanying Resolution. It is a most valuable contribution towards the achievement of the greatest and best work of peace of modern times.

I beg to remain,
Yours very faithfully and obliged,
(Sd.) E. WATKIN."



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Channel Tunnel

AT SPEECH

HE HOUSE OF COMMONS

On June 27th, 1888, by the

RT HON.

W. E. GLADSTONE M.P.

(As Revised by Mr. GLADSTONE.)

WITH PORTRAIT

PREFACE BY

THE HON. FRANCIS LAWLEY

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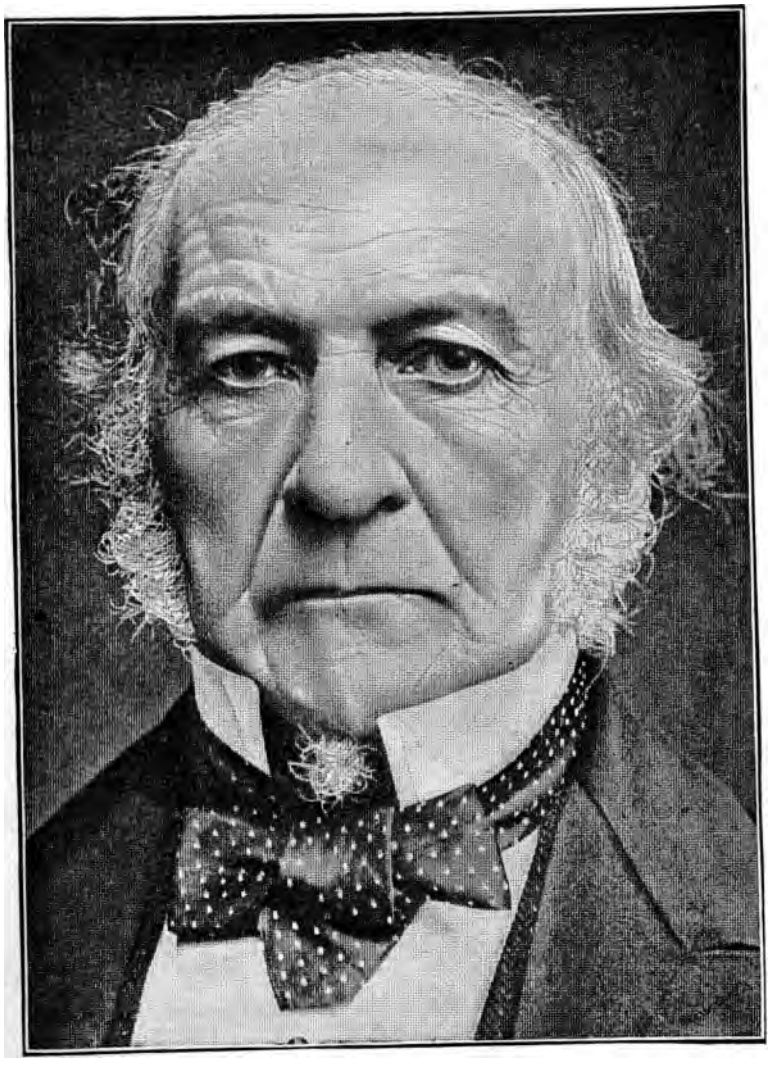

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CHANNEL TUNNEL.

Great Speech

BY THE

RIGHT HON. W. E. GLADSTONE, M.P.

IN THE

HOUSE OF COMMONS,

On JUNE 27th, 1888

(AS REVISED BY MR. GLADSTONE).

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PREFACE

BY

The Hon. FRANCIS LAWLEY.

FIVE years ago I was honoured by an invitation to write a Preface to the Speech delivered in 1883 by Mr. Bright at Birmingham, in advocacy of the Channel Tunnel. This task, which—however incompetent to treat so vast and far-reaching a subject adequately—I have again accepted *con amore*—the task, that is to say, of writing a Preface to another Speech in favour of the Channel Tunnel, which Mr. Gladstone delivered last June in the House of Commons—seems to me far lighter than that upon which I embarked in 1883; and for this reason. The five years interposed between the speeches of Mr. Bright and Mr. Gladstone have served at least to show that the commercial advantages of uninterrupted railway communication between England and the Continent are better understood at present in this country than they were in 1883.

One brief quotation from "Whitaker's Almanack" for 1888 will suffice to illustrate my meaning. In that universally popular manual I find the following passage:—

"*Imports and Exports of Merchandise into and from the United Kingdom*, 1885-86.

"Perhaps no one cause in particular can be assigned for the continued depression of British commerce, but the falling off is so

great that there must be some cause for it. The amount is now becoming very serious, and is affecting all classes of the community. Compared with 1883 the difference is no less than £113,798,000—imports, £86,208,000; exports, £36,770,000—the loss being equal to £4 a head all round. . .The chief cause no doubt is foreign competition, direct by foreign merchants finding their way to our customers, and indirect by foreigners manufacturing goods for themselves, not unfrequently by means of British machinery, British coal, and even British workmen.

"Putting exports and imports together, the total foreign trade of the United Kingdom for the last two recorded years was:—

"Total Imports and Exports (1885).....	£642,371,649
"Total Imports and Exports (1886).....	£618,530,489
"A decrease in 1886 of	£23,841,160."

Writing upon the same subject in July, 1886, Mr. Owen Dalhousie Ross, C.E. (one of our ablest and most painstaking statisticians), says:—

"Since the abolition of the Corn Laws in 1846 the results contemporaneous with, and springing from, Free Trade require to be divided into two epochs: (1) those which refer to the twenty-eight years preceding 1872, and (2) those of the last fourteen years from 1872 to 1885. During the former period the value of the exports of British and Irish produce quadrupled in value, rising in 1872 to £256,000,000, or to the proportion of £8 1*s.* per head of our population, whereas during the latter period those exports have fallen back to £213,000,000 sterling in 1885, *i. e.*, to only £5 17*s.* 3*d.* per head of the population; a comparative decrease since the year 1872 in the value of our exports in proportion to the population of no less than 27 per cent. The falling off is chiefly in all the most important branches of our manufactures—cotton, woollen, and linen goods, iron and steel, haberdashery and millinery—and, but for the constantly-growing trade with India and the Colonies, the decrease would be even more remarkable; for the exports to *foreign countries* have fallen since 1872 from £196,000,000, or £6 3*s.* 2*d.* per head of our population, to £130,000,000, or £3 11*s.* 7*d.* per head in 1885, which shows a decrease of more than 40 per cent."

That the alarming decrease in British exports to foreign countries is directly attributable to the absence of railway intercourse between England and her nearest neighbour on the Continent, may be inferred from the following table:—

Comparison of the Imports and Exports at Liverpool and London in 1886 *with* 1877, *and at Antwerp in* 1885 *with* 1876, *showing the percentage of increase.*

	Tonnage of Ships at present.	Tonnage of Ships Ten Years ago.	Percentage of Increase.
	(1886)	(1877)	
Liverpool Imports	5,017,815	4,553,425	10·199
Do. Exports	4,714,654	4,487,782	5·055
London Imports	6,810,647	5,684,700	19·806
Do. Exports	5,215,984	4,421,873	17·959
	(1885)	(1876)	
Antwerp Imports	3,388,791	2,424,825	39·754
Do. Exports	3,367,844	2,377,658	41·645

The advance made by Havre, Hamburg and Bremen within the last dozen years is equally striking.

With these three brief statements of facts and figures let me conclude the least agreeable portion of my task. Englishmen are said to hate statistics, and it is not my purpose to inflict any more of them upon readers to whom they are generally unpalatable. The question, however, of the expediency or inexpediency of uniting England and France by a submarine tunnel involves a conflict of opinion between the commercial and the military authorities of the former. Speaking generally, every commercial authority of weight in this kingdom is agreed as to the loss inflicted on our trade by the absence of a

Tunnel between Dover and Calais; while, on the other hand, many of our most eminent military and naval authorities are opposed to it, as likely to expose the country to invasion.

It would be easy for me to follow the example of Mr. Gladstone, who showed in his recent speech the fallibility of military judgment, by quoting in the House of Commons the allegations of eminent soldiers who, in 1860, assured us that Lord Palmerston's fortifications, which cost about twelve millions sterling, would preserve us from all future scares; whereas we have had more poignant, startling and costly alarms within the last few years than were ever before excited in times of peace, and Lord Palmerston's fortifications are now regarded with shame and contempt.

"If," continued Mr. Gladstone, "I am asked to believe that military authorities are infallible, if I am required to surrender my poor judgment into their hands, I must quote the case of Alderney. If there is a creation on the face of the earth that is the creation of the military authorities, it is that which is now represented by the remnants and ruins and shreds and tatters of the works at Alderney. (Hear, hear.) There are persons who say that all faults and deficiencies that are committed by the military authorities are due to the impertinent interference of civilians. Well, I had to do with the works at Alderney in the sense of yielding to the imperative demand of the military authorities of that day, and excellent and very distinguished men they were—Sir John Burgoyne, Lord Hardinge, and others. The first demand was, I think, for £150,000. They told us that if we would spend £150,000 at Alderney, Cherbourg would be sealed up so that no French fleet could issue from it. I agreed, accordingly, that that sum should be voted; but the matter did not end there. The sums demanded increased, until they almost reached, I think, a total of £2,000,000; and now there remain only the miserable fragments of that work, more like a monument of human folly than of human sense or skill. Although useless to us, perhaps the works will not be absolutely useless to any enemies with whom we may at some future period have to deal. They may possibly extract some small

portion of shelter and accommodation from those ruins." (Laughter, and hear, hear.) (*a*).

Or, again, I might follow Sir Edward Watkin's example, and answer military objections to the Channel Tunnel by arraying one soldier against another, as there are many soldiers among us who openly dissent from, and even ridicule, the opinions of the Duke of Cambridge, Lord Wolseley, Sir Edward Hamley, Sir Lintorn Simmons, and others. For my present purpose, however, I will assume that commercial men in this country are all but unanimous in favour of a Channel Tunnel, and that a vast majority of our soldiers are against it. The final decision, then, at which sooner or later—and it will not be long delayed—the country will have to arrive must rest with the people of England, to whom Mr. Bright appealed in 1883 and Mr. Gladstone in June last. In order to assist their judgment, let me endeavour to show what military authority is worth, and how far it owes its paramount influence to the support of civilian journalists, writing for the most part from instructions given them by other civilians, who are

(*a*) The following letter appeared in "The Field" of July 28, 1888:—

"THE DANGERS OF ALDERNEY HARBOUR.

"Sir,—You will be doing my brother yachtsmen good service by warning them against entering this harbour without special precautions as to the dangers from the broken down breakwater. There is absolutely nothing to guide you as to the point where the stones end. A buoy has been placed in former years, I know, but it has disappeared for some unaccountable reason.

"I came in last night, after a sharp run from Cherbourg, and had it not been for the shouting of the men on the breakwater should have been wrecked. Fortunately my captain just had time to put the helm hard a starboard, and we only grazed. But 3 ft. off the false keel and sundry copper plates ripped off, will compel an immediate return to Cowes to repair the damage.

"Orelia, off Alderney, *July* 25. "EDWD. B. FORBES."

ignorant that the landing of a great force of armed men, with artillery, horses, ammunition, and provisions, on a hostile coast (which with or without a tunnel would, as Colonel Hozier shows, still be necessary) is without any exception the most difficult, the slowest, and the most dangerous operation of war; who have never seen a campaign, a battle, or even a skirmish; and who are always prone to believe that panics, and a lively credulity and alacrity in entertaining them, are the surest evidences of patriotism and intelligence.

Let me begin with the opinion of the Duke of Wellington, who in his declining years was the greatest alarmist that this country ever produced, and who proclaimed in the House of Lords that if 12,000 fully-equipped French soldiers were landed in England he saw nothing to prevent their marching on and taking London! About the "Iron Duke," when in his prime, no Englishman, from the highest to the lowest, would ever say a disparaging word. But it is an incontrovertible proof of the slight weight attributed to the Duke's senile alarms that neither Lord Wolseley, nor any of those who believe in the possibility of invasion, with or without a Channel Tunnel, has ever thought it worth while to reproduce, and to scatter broadcast through the land, the Duke's "Letter upon our National Defences," written five years before its author's death, and thirty-two years after his last experience of active hostilities.

> "In Life's last stage, what prodigies arise!
> Fears of the brave, and follies of the wise."

Who would believe that the following words came from the hand which "curbed the might of Bonaparte,

rolled the thunders of Assaye"—from the hand of England's greatest soldier? "I am bordering," he wrote, in 1847, "on seventy-seven years of age, passed in honour. I repeat, then, that there is not a spot on our southern coast, unless it be immediately under the guns of Dover, upon which infantry might not be thrown ashore at any time of tide, with any wind, and in any weather."

To criticise this obviously extravagant statement would be an insult to the understanding of Englishmen. There are miles upon miles of our southern coast upon which no row-boat could land under any circumstances. Mr. Cobden pointed out, in his "Three Panics," published in 1862, that if anybody but the Duke of Wellington had stated that there was any shore in the world on which a body of troops could be thrown "at any time of the tide, with any wind, or in any weather," he would have been deemed a madman. Coming from the great Duke, the assertion was unchallenged; his entire letter was quoted as an unanswerable proof that the country was in danger. "To have ventured," added Mr. Cobden, "on criticism or doubt would only have invited the accusation of want of patriotism." Even these "fears of the brave" could not, however, induce the Duke to regard the ground lying under the guns of Dover as liable to be occupied by an enemy; and what is there to prevent the hole in which the English end of the Channel Tunnel debouches—a space about as big as the bear-pit in the Zoological Gardens—from being commanded by Dover Castle and Dover Breakwater? If it is argued—as it has been by the Duke of Cambridge and Lord Wolseley—that,

assisted by treachery, an enemy might seize Dover Castle, would it not be equally easy to seize it whether there was or was not a Channel Tunnel? If it comes to treachery, do we not stand in jeopardy every hour? For months and months prior to the assassination of William the Silent at Delft, in 1584, Balthasar Gerard plotted to get into the domestic service of his victim. No life in this or any other country is safe against a crafty and resolute assassin; and there is no command, and no place of trust, civil or military, which may not fall into the hands of a traitor. It is absolutely inconceivable, however, that the entire garrison of Dover Castle, or of any other military fortress, should be traitors, or that under any circumstances the traitors should bear more than an infinitesimal proportion to the honest officers and privates of the garrison. To oppose such a great and beneficent work as the Channel Tunnel on such flimsy grounds is an insult offered to the British Army, which the Duke of Cambridge has commanded for two and thirty years without ever coming across such an instance of treachery. In the long and splendid annals of that Army, there is, happily, no case of desertion which, as regards all the worst elements of treachery and ingratitude, can compare with that of General Bourmont, who commanded the leading division of Napoleon's *grande armée* in 1815, and went over to the enemy three days before the Battle of Waterloo.

Far be it from me to speak disrespectfully of soldiers, with whom I have passed many of the happiest years of my life, and in whose company I have, as a special correspondent, witnessed every possible operation of

war, including battles, skirmishes, sieges, marches, retreats, surprises, ambushes, passages of rivers, blockade-running, and attempts to land men on a hostile coast. In the practical management of soldiers in action and upon parade, a drill-sergeant undoubtedly knows more than any civilian that ever lived. When, however, we recede from these professional details, and contemplate the strategy of a General, and the resources at his command, it cannot be doubted that there are civilians—among whom I may mention the late Dr. Thomas Arnold, Head Master of Rugby School—who are as well able to grasp military subjects and problems as any soldier in existence. Neither Jomini, nor Matthieu Dumas, nor Hamley, understood the principles of war, and the moral, political, and material influences which affect its general conduct, better than Dr. Arnold, or the still living Mr. George Hooper, whose "Italian Campaigns of General Bonaparte in 1796-97," published in 1859, together with his "Waterloo: A History of the Campaign of 1815," published in 1862, are unsurpassed in scientific grasp by the writings of any soldier. "I would advise you," said Mr. Bright, in 1883, "never to take the opinion of high military authorities, except on the question of what should be done when you are actually at war." Need I remind the Duke of Cambridge that if his visionary fears had commanded general attention in 1851, the Great Exhibition would never have taken place? Last month Sir Edward Watkin read a letter in the House of Commons expressing astonishment that the English Cabinet did not insist upon the Queen retiring to Osborne, in 1851, because 3,000 men

of the French National Guard were permitted to parade the streets of London in uniform, and wearing their side arms! At this moment there is in existence a still wilder letter (I have myself seen it), which if published would cover its still living writer with more confusion and ridicule than he would care to face. There are, added Sir Edward Watkin, thirty safe modes of closing or flooding the Channel Tunnel, against the employment of any one of which it is an idle bugbear to whisper the single word—treachery. Who that has ever read Erckmann-Chatrian's story of "Waterloo" can have forgotten the graphic description of the hurried retreat of the French to Charleroi?

"In spite of the fatigue, which almost broke us down," exclaims Joseph, "Buche and I started again to the left, whilst on the right, behind us, in the direction of Charleroi, the cries and shots redoubled, and all along the road we saw nothing but men fighting. About one in the afternoon we repassed the Sambre by the Châtelet Bridge, and arrived about three o'clock at a little village. We must have been an ill-looking pair, especially Buche, with his bandaged head, and his beard of a week's growth, thick and rough as the bristles of a wild boar. We stopped at a forge, and the blacksmith, a tall, dark man, told us to go into the tavern opposite, where he would give us a jug of beer. When we had sat down, the room was so full of people, who came to hear the news, that we could scarcely breathe. They asked us, when we had come to an end of eating and drinking, if it were true that the French had lost a great battle. I was ashamed to confess our disaster, but Buche exclaimed, 'We have been betrayed. Traitors gave up our plans. The army was full of traitors, who cried, "*Sauve qui peut!*" How could you expect us not to be beaten?' This was the first time I had heard treason spoken of; it is true some of the wounded had cried, 'We are betrayed!' but I had not taken any notice of their words; and when Buche got us out of the difficulty in this way, I was at once pleased and surprised.

"These good people then joined with us in indignation against the traitors. Buche said the Prussians had arrived through the treason of Marshal Grouchy. This did appear to me a little strong; but when

the peasants, filled with emotion, made us drink more beer and gave us tobacco, I ended by saying the same as Buche. It was not till afterwards when we had left the place that the idea of our abominable falsehoods made me ashamed of myself, and I exclaimed,—'Do you know, Buche, these lies of ours about traitors are contemptible things? If every one says the same sort of thing, in the end we shall all be traitors, and the Emperor the only honest man! It's a shame to our country to say we have so many traitors amongst us—and it's not true!'

"'Bah! bah!' said he, 'we were betrayed; but for that the English and Prussians could never have forced us to fly!'"

Are not the imaginary excuses for their defeat put forth by Buche and Joseph—excuses which, in 1815, were on every French tongue—akin to Lord Wolseley's suggestion that, if the Channel Tunnel be made, ninety-nine English soldiers out of every hundred will advise their friends to invest in American securities rather than in those of a country so liable to invasion as England would then be?

As regards the United States, Lord Wolseley cannot be unaware that there is probably not a single American officer who took part on either side in his country's great Civil War, between 1861 and 1865, but scouts the idea that a hole in the ground—an exaggerated rat-hole—can by any possibility be a danger to this country, which is defended by eight millions of adult men of the same race as George Washington, Andrew Jackson, Winfield Scott, Admirals Hull, Farragut and Porter, Stonewall Jackson, W. T. Sherman, U. S. Grant and Robert E. Lee. Lord Wolseley may imagine that the counsel of American soldiers, among whom are some of the ablest military engineers in the world, is not always benevolent to this country. A pretty large experience of American officers,

naval and military, has, however, taught me that there is not one of them but would give his judgment on such a subject from purely professional grounds, and that those of them likely to be animated by ill-will towards the home of their ancestors are few indeed. Turning to Germany, we know that Field Marshal Von Moltke, the ablest book-soldier and strategist in existence, holds that to attempt to attack England through a tunnel would be tantamount to invading her through his library door. Colonel H. M. Hozier, again, who knows German military men as well as any English soldier alive, says that to them arguments against the Channel Tunnel appear to spring from a disordered imagination. Colonel Hozier is quite unanswerable when he says:—

"Our military authorities seem to have been placed in a most unfair position. It was the duty of the Government of the country to decide whether, for commercial reasons, a Channel Tunnel should be permitted or not. If a Channel Tunnel is a commercial necessity, the military and naval authorities should be told to find the means for defending it; and we may be perfectly certain that in that case they will find the means to do so. To ask the military authorities, 'Is it an advantage in a military sense or not?' only places them in a position of being obliged, out of caution, to object to it; but if the military authorities are told that, for commercial reasons, the Tunnel must be formed, they will easily find means to defend it."

Moreover, Lord Wolseley greatly deceives himself when he imagines that out of every hundred English officers ninety-nine are opposed to the Channel Tunnel. If he will take the trouble to ascertain the genuine opinions of Royal Artillery and Royal Engineer officers—irrespective of their impressions that it is fashionable to denounce the Channel Tunnel, and might injure them professionally were they not to do so—he will have his eyes opened in a way that he little expects. It was an

artillery officer who said recently that objectors to the Tunnel resemble a timorous householder, who imagines his home to be open to a burglar's attack because a gimlet hole is driven through his front door.

Lord Wolseley, who will not hear of a tunnel from England to France, cheerfully promises his aid and encouragement to those who would make a tunnel from Scotland to Ireland. It is not likely that he will be taken at his word; for, despite its ineffable political advantages, a tunnel from Port Patrick, in Wigtonshire, to Donaghadee, in County Down, would never pay, unless in connection with a Channel Tunnel. The distance is only twenty-two miles, but it would cost three or four times as much as the Channel Tunnel, for which Nature seems to have specially provided by laying down a stratum of grey chalk, or chalk and clay mixed, which is impervious to water and as easily scooped out as a Stilton cheese. Scotland and Ireland, on the other hand, are divided at the bottom of the sea by the hardest trap rock, composed of felspar and hornblende, which it would puzzle Captain Beaumont to pierce, and which blunts the chisels of a boring machine after a few strokes. In addition, there is in the middle of the sea a huge cliff, or chasm of unknown depth, which would either have to be filled with concrete, assuming the depth not to be too great, or bridged by an iron tube similar to that which crosses the Menai Straits. If, however, the Irish Tunnel should be built before that from Dover to Calais is undertaken, Lord Wolseley would have cause to regret his advocacy of the former, as it would inevitably lead to the construction of the latter.

There is no passenger and goods traffic reaching England which can compare in wealth and importance with that coming from the United States. It was but the other day that the Umbria brought 600 first-class passengers from New York to Liverpool, and the City of New York, the latest addition to the Inman Line, is constructed to carry 850 first and second-class passengers. The ships of the Inman and International Line are said to have been built chiefly by American money, contributed by Philadelphia. Some years since, certain dry goods firms in Philadelphia complained that their imports were delayed at the New York Custom House, and formed a company to build or buy some American steamers, which were put on the line between Liverpool and Philadelphia. The Philadelphia Central Railroad guaranteed interest on the bonds of the Steamship Company, and had to pay it. After working for some years, several ships of the Liverpool and Philadelphia S. S. Company were lost or condemned, and it became necessary to charter English steamers to fill the gap. Some two or three years since a statement of its affairs appeared in print, showing that while the American steamers did not pay their working expenses, the English steamers paid 10 per cent. By this time the Philadelphia Central Railroad was heavily committed, and Mr. Peter Wright resolved "to make a spoon or spoil a horn," by suggesting that it should increase its responsibility by guaranteeing interest upon some of the capital spent in building the City of New York and the City of Paris in England—the two largest passenger ships ever turned out since the

Great Eastern. The City of New York sailed from Liverpool to New York on August 1, and the City of Paris will be ready in a few months. This circumstance shows the anxiety of the Americans to compete with England on the Atlantic, although their best ships are at present of English make, and sail under the English flag. The day, however, is near at hand when citizens of the United States will be permitted to buy as many English ships as they like, and to sail them under the American flag, as the legislation which now forbids them to do so will shortly be abrogated. Nor will it be long before the Americans are able to build iron passenger steamers in their own country, capable of competing with the finest and largest vessels of the Cunard, the White Star, the Guion and the North German Lines. In the opinion of those who are best qualified to judge, the Atlantic passenger trade is still in its infancy; and England will lose most of it, if she is so insane as to listen to the alarmists who forbid her to make a Channel Tunnel. Already a far greater proportion of the letters despatched from New York to England and Europe come by the North German than by any English Line. Concessions and privileges are now given by Americans to German, and withheld from English, lines, for the simple reason that Berlin is a better market for American securities and enterprises than London, which has ceased to be the great financial centre of the world. Our manufactures are being transferred from England to settle in Belgium, France and Germany, and our financial business is following them. It is poor consolation to reflect that while England

is being ruined, the Duke of Cambridge, Lord Wolseley, and a few other soldiers, who always disclaim any desire to be regarded as statesmen, are fiddling over her ruins.

Now, if there were tunnels from Ireland and Scotland, and from Dover to Calais, can it be doubted for a moment that every American passenger coming from the New to the Old World would land in Ireland? The voyage from Sandy Hook to the west coast of Ireland will soon be accomplished in five days; and no one who knows the Americans, of all classes, will doubt that they would all elect to land at the nearest European port connected with England and the Continent by railway. "The shop-keeping nation," says Emerson, in his "English Traits," "has, to use a shop-word, a good stand. England is anchored on the flank of Europe, right in the heart of the modern world. As America, Asia and Europe lie, these Britons have precisely the best commercial position in the whole planet."

These words were written in 1848, when railways and steamboats were still in their infancy. The lapse of forty years has covered the Continent with railways, and built up great ports at Antwerp, Hamburg, Bremen and Havre, to which lines of magnificent steamers now run without paying tribute to England. Nevertheless, she has still "the best commercial position in the whole planet," if she would consent to make use of it. "Our country," says Colonel Hozier, "is the landing-stage of the great traffic between America on the one side, and the continent of Europe on the other—between South Africa on the one side and Europe on the other—and also for the vast trade which comes from Australasia and the

far East." All these branches of enriching commerce are threatened by our want of railway communication with the Continent. Twenty-five miles of submarine tunnel from England to France would restore this nation to her ancient commercial supremacy; and would lead *ex necessitate* to another tunnel from Scotland to Ireland, which would yield ample dividends if American trade and passengers flowed through it, and would for ever settle the Irish question. The increase in our wealth and comfort would be untold, and Ireland would be a sharer in both. All these advantages are obvious to the meanest understanding, and are insusceptible of contradiction. Against them are to be set the craven fears of a few soldiers and the sentimentalism of a few journalists. I am acquainted with one of the latter—a man whom to know is to love, and for whom one line of Shakespeare,

"This precious stone set in a silver sea,"

outweighs all material considerations and arguments.

Sir Michael Hicks-Beach admits that, for want of better communication with the Continent, we are losing the depôt trade of the world. "I will tell you," he continued, "how to retain that trade by a better and cheaper mode. It is so to improve your harbours as to make them better and more accessible to large ships than the harbours of your Continental rivals, and in doing so you would have the additional advantage of benefiting your mercantile marine." Can any sane man deny that Sir Michael Hicks-Beach's proposal was pulverised by Mr. Gladstone's reply to his suggestion?

Mr. Gladstone said, "The Right Honourable Baronet objects to a Channel Tunnel, but proposes that the harbours of this country should be enlarged. He has no apprehension on this subject. Well, my apprehension is not great; but, if I am to conjure up any prospect of danger, I tell the Right Honourable Baronet deliberately that his plan of easily accessible harbours, and great ships, and of making the Channel a high road to be crossed with wonderful rapidity, presents ten times the danger that the prospects of a tunnel could possibly awaken in the most excitable mind." All the bugbears of our predecessors, who kept on prating "Steam has bridged the Channel!" have lost their terrors for Sir Michael Hicks-Beach, who can see nothing but objections to localising invasion, so that its dangers shall be confined to watching a hole twenty feet broad, in the event of our again being at war with France.

Let it not be forgotten that, in the event of a war between England and any other power than France, a Channel Tunnel would emancipate this country from the most formidable peril to which protracted hostilities could possibly expose her. Of all that English men, women and children eat and drink, a vast and rapidly increasing proportion comes from foreign countries; to say nothing about raw material, upon which the very life of our manufactures depends. Assuming that we were at war with Russia, can it be doubted that some of our American brethren, "a little more than kin, and less than kind," would avenge such "Anglo-rebel pirates" as the Alabama, by fitting out privateers to sail under the Russian flag? American ships of high speed, and with

formidable batteries, would be sold to Russia, and American officers would enter her service, as Paul Jones did, after the cessation of the Revolutionary War which ended in the establishment of American independence. If, on the other hand, a Channel Tunnel were in existence, all danger of starvation, or even of short commons, would be averted from this country were she at peace with France. I do not envy the feelings of those English soldiers who have terrified their countrymen into forbidding the construction of a Channel Tunnel, if we are soon engaged in a long-protracted war with a strong maritime Power other than France, and are forced by starvation, or the dread of it, to come to terms with an enemy whom, with a Channel Tunnel, we might defy for years.

Who, then, are the true enemies of their country? On the one hand we have men who tell us that the danger of our being invaded, in case of war with France, through a hole—which even Lord Wolseley admits could be held by fifty forewarned soldiers against a world in arms—is intolerable; and on the other, we have a host of commercial authorities and Chambers of Commerce proclaiming that, without a Channel Tunnel, the volume of our trade will dwindle and decline more and more, until our manufacturers are compelled to slip away one by one, and establish themselves in Germany, or Belgium, or France, or Italy, or Japan, or in North or South America. With France we have had no war for nearly three-quarters of a century; and, thanks to her fears of Germany, which are not likely to be soon removed, she has entered into heavy recognizances to keep the peace

with us. The pacifying and harmonising influences of increased intercourse between England and France are so obvious that it is unnecessary to waste a word upon them.

Sir Walter Scott tells us, in his "Life of Dean Swift," that in the Dean's lunacy he had some lucid intervals, on which occasions his physicians and guardians took him out for the air. On one of these days Swift remarked a new building near Dublin, and asked what it was designed for. "That, Mr. Dean," answered Dr. Kingsbury, "is a magazine for arms and powder, built for the security of the city." The Dean made no reply, but on returning home wrote down the following lines—the last that he ever produced :—

> " Behold! a proof of Irish sense;
> Here Irish wit is seen;
> When nothing's left that's worth defence,
> We build a magazine."

The opponents of the Channel Tunnel are doing all that they can to reduce these islands to a condition " When nothing's left that's worth defence." Who, then, I ask again, are their country's chief enemies? It is for the people of England to answer; and with them, and fortunately with them alone, the ultimate decision will lie.

Speech of

The Right Hon. W. E. GLADSTONE, M.P.

THE appeal which has been made to me by the right hon. gentleman is a very fair appeal. He has a right to know, and I will endeavour to explain to him, why, having been at the head of the Government in 1884, and having voted against proceeding with the Channel Tunnel Bill, I do not take the same course on the present occasion. The right hon. gentleman has spoken for the Government to which he belongs, and so far he is in the same position as was my right hon. friend the member for West Birmingham when he asked the House to put a negative upon the Bill. But the right hon. gentleman will at once perceive the broad and vital difference between the speech which he has now made in stating the grounds for his proceeding and the speech which was then made by my right hon. friend. The right hon. gentleman has opposed the Channel Tunnel Bill, I am sorry to say, upon its merits, upon grounds which will be as good in any future year as they are at the present moment. (Ministerial cheers.) My right hon. friend the member for West Birmingham is not in the House, but I have had within the last week or ten days an opportunity through his kindness of going over the whole ground and testing our several recollections, and I believe I am correct in saying that in the speech of my right hon. friend there was not one word of objection to the Channel Tunnel upon its

merits, and that his opposition was an opposition of time, and of time only. (Hear, hear.) For my part, I could not have taken then any other position, and I will presently state why it was that I was a party to opposition on that ground. It is indeed nothing less than a matter of justice to the hon. member for Hythe and the promoters of the Channel Tunnel, after what happened in 1884 and 1885—I believe these were the years—that I should explain the view which I took of their case and the reasons which induced me at that period, without any doubt or hesitation, to join in the opposition to the progress of the Bill.

I am very glad, Sir, to feel assured, after the debate of last night, that we are now engaged in a discussion of a very different kind. I do not think that any person who agrees with me will vote against the Government from any desire to displace it, or that any gentleman who will vote with the Government will do so upon the ground that this is one of the sacrifices required from them to protect the country against the danger of a Liberal invasion of the benches opposite. (Laughter.) So far, the debate has favourable characteristics. But there is also something in it which inspires a feeling of despair. I am afraid the arguments in this matter on the one side and on the other are looked upon by those who do not accept them, not only as unsatisfactory, but as something worse. On political questions we always feel that at any rate there is something in what the other man says, but on this occasion we seem to get at certain ultimate principles and modes of thinking which are fixed on one side and on the other. The right hon. gentleman has stated his case with great clearness and ability, and yet I frankly own—and frankness is a great virtue—the whole of the consideration he has advanced and his arguments against this tunnel are (I hope he will pardon me for the phrase I am about to use) neither better nor worse than mere and sheer bugbears. (Cheers.)

And now, Sir, having done homage to the virtue of frankness, I will endeavour to fall back upon the virtue of courtesy. I will relate to the House the manner of my first acquaintance with this subject. It was placed before me by a deputation which had a Tory

Chancellor of the Exchequer at its head. Not that he bore that title at the time, for I was myself then, in 1865, Chancellor of the Exchequer under Lord Palmerston. But he succeeded me in that office. He was a gentleman whose name has always been mentioned with respect in this House—I mean Mr. Ward Hunt. (Hear, hear.) He came to me as the leader of a deputation and endeavoured to induce—or perhaps I should say seduce—me (laughter) to support the promotion of this (we are told) dangerous project. Mr. Ward Hunt was totally unaware of all those dangers which have been opened up by the right hon. gentleman. But here I am obliged to correct a statement of my hon. friend the member for Hythe, who stated that I alone among the ministers of that day was disposed to give a guarantee in some shape or other to the promoters of the project. I never was disposed to give a guarantee to the extent of a single farthing to the promoters of this scheme or any other scheme of a similar kind. (Hear, hear.) On the contrary, Sir, I was instructed on behalf of the Government, and with my own full concurrence, to refuse a guarantee. But we did so without giving the slightest indication of any opposition on the merits to the Tunnel scheme. A series of other Governments followed; and every one of those Governments officially committed itself on the merits of the Tunnel. Lord Granville on the part of the Government of 1868, Lord Derby on the part of the Government of 1874, and, I think, the senior Lord Derby, the distinguished Prime Minister of a former period, expressed precisely similar sentiments; and every one of those Governments acting unanimously was engaged so far in the promotion of this project that they gave it their unequivocal sanction. (Hear, hear.)

Nor did they stop there, but they entered upon international proceedings. Communications were established with France. A joint commission was appointed on the part of the two countries, and I do wish to bring home to the minds of hon. and right hon. gentlemen the degree to which our honour and our dignity in an international aspect are involved in the question before the House.

I must say that that is one of the most serious considerations that operate on my mind with regard to the promotion or rejection of this Bill. (Hear, hear.) The two Governments instituted a commission to consider the details of the schemes by means of which this great project could be best advanced. The principle of the project was taken for granted on the one side and on the other, when we entered into these formal proceedings in unison with the French Government. The commission laid down conditions which were to be the basis of a treaty between the two countries, and the actual signature of the treaty was suspended, not upon the ground of any political apprehension whatever, but simply, I believe, upon the ground that financial considerations did not at that moment favour the progress of the scheme. Now, Sir, what presses rather disagreeably upon my mind is this—that there was perhaps something of the character of an engagement of honour in these proceedings between England and France, and that it is a matter of some difficulty to justify the recession of a kingdom such as this from a position of that kind, after we had voluntarily and deliberately made it the subject of such international proceedings.

The right hon. gentleman says there are serious objections raised by the military authorities against the scheme. Well, Sir, at the time I am speaking of, the opinion of the military authorities consulted by the War Department was in favour of the Tunnel. (Hear, hear.) The two Governments did not act in respect of the Tunnel without consulting military authorities, and those military authorities whom the Government did consult were distinctly favourable to the Tunnel. (Hear, hear.) But I think I may go a little further than that and may venture to read, at least for the purpose of challenging contradiction, a short extract from a very well-informed memorandum with which I have been supplied on the part of the promoters of the measure. The extract to which I refer says, "It was not until the autumn of 1881 that any military opinion adverse to the Tunnel was expressed." (Hear, hear.)

Now, Sir, that is a remarkable fact. The Tunnel was then a scheme twenty years old. It had been discussed in every possible form. It had been the subject of much official correspondence, and it had received the assent of a series of administrations. Those Governments did not assent without the authority of the military department and the advice of its military advisers, and until the year 1881 these portentous discoveries, which have taken possession of the mind and imagination of the right hon. gentleman, and of those who sit near him, were never heard of. (Cheers.) Surely that is rather a staggering statement. By 1881, however, we find that the military authorities had commenced their operations, and a great ferment began to prevail. A combination of powers was brought into operation. The literary authorities were brought to back up the military authorities. Great poets evoked the muses (laughter) and strove, not as great poets in other times used to do, to embolden their countrymen to encounter dangers that existed, but to intimidate their countrymen by conjuring up phantoms of danger that did not exist. (Laughter and Cheers.) The military host and the literary host were backed by the opinion of what is called "society," and society is always ready for the enjoyment of the luxury of a good panic ("hear, hear" and laughter) when that panic is based on the contemplation of a latent contingency which is not in the slightest degree likely to arrive. (Laughter.) These panics in the air have an attraction for certain classes of minds that is indescribable, and these classes of minds, I am bound to admit, are very largely to be found among what are termed the educated portion of society. But the terrors which have been evoked in connection with this plan never touched the mind of the nation. Such terrors very seldom find access to the mind of the nation. But they took hold of certain classes, and it had required twenty years even for these classes to discover them. They were represented by what is called the public opinion of the day—that is to say, public opinion manufactured in London (hear, hear) by great

editors and clubs who are at all times formidable and a great power for the purposes of the moment, but who are a greater power and become overwhelming in their strength when they are backed by the threefold forces of the military and literary authorities and the social circles of London. (Hear, hear.)

These powers among them created at that period such a panic that even those of us who were most favourable to the Tunnel thought it quite vain to offer a direct opposition to the torrent. We therefore proposed the appointment of a joint committee, and the issue of that proceeding has been very fairly stated by the right hon. gentleman.

I am bound to make a fair admission—that, although in the Government of 1868 there never was a question as to the propriety of the Tunnel, and Lord Granville even instituted communications with France, yet when we come to the Government of 1880 and the circumstances of 1881, 1882, and 1883, a change of opinion did find its way even into the Cabinet. Some of us were not what I should call quite sound. If I am asked why under these circumstances I took part in throwing out the Channel Tunnel Bill my answer is to be supplied by reverting to the general situation of affairs at the period. We, the Government, were engaged in arduous undertakings. Powers were put into action against us at that time within the walls of this House which are now happily in abeyance. We deemed that it was our duty to have some regard to the time of Parliament. We knew it was impossible to pass the Bill. It was a time of tempest, and as during a tempest a prudent man often finds it well not to trust to his frail umbrella, but to take shelter in some substantial building, so we deemed it to be best for all parties to seek at the moment a covert from the storm. (Laughter.) At all events we thought it idle to persevere in a hopeless struggle. We did not in the least enter into its merits. We did not think there was the slightest chance of proceeding with the Bill to the end, and we, therefore, deemed the discussion perfectly useless. That was the principle on which we proceeded.

I will now say a little upon the arguments of the right hon. gentleman, but I am not going to attempt to follow those arguments as if we were engaged in a debate like that of last night. I do not think it desirable to make this discussion resemble a set debate between both sides of the House. There are some on this side of the House who are probably unsound. (A laugh.) I do not now refer to the general unsoundness which we find to prevail with some who were once our friends, but to unsoundness on this particular question. On the other hand, I hope there are some on that side who are sound on such an argument as this. But there was one observation which fell from the right hon. gentleman which I regret. It was his comparison between the internal condition of France at the present time and the internal condition of France some six or seven years ago. I think it was an error to enter upon that chapter of the subject, even if the right hon. gentleman really entertains the opinion which he apparently does entertain. But as he has said that he thinks there is not the same prospect of stability in France now as then, I must give myself the satisfaction so far of expressing a rather different opinion. (Cheers.) And I may remind the Government and the House of this fact, that the French Republic never, since 1870, has been called upon to pass through so severe a crisis as the crisis—not yet, I think, twelve months old—with respect to the appointment of President. That was the most trying experience which it has had to go through, and the approach of the crisis made many of its friends and well-wishers tremble. (Hear, hear.) It made every sound and right-minded man in France apprehensive; but I rejoice to say that France, and the institutions of France, came through the struggle with a calm tranquillity and solidity, which could not have been exceeded in any country in the world. (Cheers.) That is the one thing I would say in answer to the right hon. gentleman.

I do not touch on the engineering question. Neither will I touch upon the commercial question, except to say frankly that

I believe the commercial advantages to be enormous. I have nothing, however, to do with engineering or commercial questions. Neither do I touch the finance of the scheme. That is no affair of mine. I am here simply as a member of Parliament to see whether there is any reason why I should withhold my assent to the plan. I have used a familiar term as to sheltering from the storm. After hearing the speech of the right hon. gentleman I am not quite sure whether the storm is still going on, but I have recently been under the impression that the panic had passed away. My impression was that the literary alarm, the social alarm, which backed up the military alarm, was at an end, and that there was now a chance of a fair, temperate, and candid discussion. The right hon. gentleman refers us to a land frontier as if that were an unmixed evil. No doubt it is less secure upon the whole than a sea frontier, but he must not forget that a land frontier has enormous advantages with respect to intercourse between man and man, which are of great consequence in the view of those who believe that peace and not war is the natural and proper condition of mankind, and is to be to a great extent for this country, at least, the ordinary, normal, and habitual condition in which we live relatively to foreign countries. But on the question of procuring a land frontier, if it is a land frontier, which I do not think it is, the advantages of a land frontier in peace are enormous compared with its disadvantages and dangers; and the effect of this plan, I believe, would be, without altering in any way our insular character, or insular security, to give us some of the innocent and pacific advantages of a land frontier.

With regard to the political and military objections, I must say I feel pained, as an Englishman, in considering the extensive revolution of opinion that has taken place within the past twenty years on this question. (Hear, hear.) There were then doubts as to the financial success of the Tunnel—but on that matter I do not enter—but there was no doubt cast upon it as to the question of our security. Now, Sir, a sharp transition has taken place. A

transition from darkness to light is often inconvenient, yet it is good. The question is, whether our transition has been from light to darkness; and it is rather a serious question for us to consider whether the English nation and Government from 1860 to 1880, or whether the influences which acted during the years 1883-4 and 1885, and which are to some extent acting now, lead us in the right or the wrong direction. Speaking of the dangers of a land frontier, the right hon. gentleman said that this end of the Tunnel must always be the subject of great anxiety. Well, if this end of the Tunnel is to be the subject of great anxiety, what will the other end be? (Cheers.) But, strange to say, I find that the other end of the Tunnel is the subject of no anxiety at all. (Laughter and cheers.) Many persons consider the French nation as rather light-minded; as a people with great resources and great ingenuity, but still light-minded; unlike ourselves—solid, consistent, perhaps rather heavy, but at any rate a very steady-going people, who make up our minds slowly and resolutely, and do not change them. (Ironical laughter.) Oh! I am not speaking for myself. (Loud laughter.) I am only speaking on behalf of my country. But I would ask gentlemen to apply this test to the case of the French people. I must say that they have treated this matter with the most dignified self-restraint and consistency throughout. (Hear, hear.) I am bound to give my opinion, and I think the French, had they any other than friendly dispositions with regard to ourselves, might have made serious complaint of the manner of their treatment in having been invited to embark in this enterprise to an extent only short of the signature of the treaty, and then having found that we had receded from the ground and left the light-minded people standing in their original attitude while we have very considerably altered ours. Well, but, you will say, the question of our invading France is not a matter to be considered at all. (Hear, hear.) Therefore the other end of the Tunnel does not seriously enter into the question. The real question that we have before us

is the likelihood of the coming of that unhappy day—I agree it is a perfectly possible thing, I think and hope it is nothing more than a possible event, still it must be taken into consideration—when England will be invaded by France. I am very much behind the age in a great many respects; and I am very much behind those representatives of the age who sit on the opposite side of the House, for I have the habit of being guided in my anticipations of the future partly at least by considerations of the past. I know that is a mode of looking at a subject entirely dismissed from the consideration of the Conservatism now in fashion. It never much regarded the future; if it now discards the past, it has nothing to depend upon but the present, which flits away as I am speaking. Let us, however, for once glance at our history. For about 800 years, beginning from the Conquest, I want to know which country has oftenest invaded the other, and I will state this proposition, that the invasions of France by England have been at the least tenfold more than the invasions of the British Islands by France. Do you believe in a total revolution in the means of action between the two countries? There has, indeed, been a great change in one matter—that of population. Now, Sir, during the Revolutionary wars what happened? The great Napoleon—the most wonderful general and strategist of modern times—the man of whom Dr. Dollinger says that he raised war almost to the dignity and attitude of a fine art—addressed the whole of his resources and his thoughts to the invasion of England. Ireland was tried three times by the Directory, and three times there were miserable failures. Two other fleets had set out, one from Holland and one from Spain, and they had been destroyed by the power of British arms at sea. But Napoleon made it a study nightly and daily to devise and arrange the means of invading England, and he was obliged to recede from his design. Let me now touch another topic. It is worth while for those who have these portentous ideas of the power of France, and so small an idea of our means of defence, to consider the

relative population of the two countries. At the time when Napoleon prosecuted his schemes the population of Great Britain was about 10,000,000. The population of France was then 22,000,000. I will not count the population of Ireland, for at that period unfortunately, as at others, it added nothing to the military resources of this country for repelling invasion. Well, 10,000,000 of Englishmen constituted the sum of those whom Napoleon had to invade, and he could not manage it. (Cheers.) At the present moment this island contains far more than 30,000,000 of men not less strong, not less determined, not less energetic than the 10,000,000 of Napoleon's time, and they are close in mere numbers upon the population of France. Here, then, are two countries, and the question is whether one will invade the other by means of the Channel Tunnel. This is a country that has incessantly invaded France, and I am not sorry to say that, though we did it with marvellous success 500 years ago, we have not always been equally successful in recent years. Doubtless, there is the paramount case of 1815, with respect to which, if a case could be quoted on the other side parallel to the action of England and of Wellington, I would admit that there would be something more in the argument of the right hon. gentleman than I can allow that it contained as matters stand. I shall, however, be told that Napoleon had no steam. That appears to be a strong argument; but it is capable of being used both ways. (Hear, hear.) I believe that the invention of steam and the great revolution that we have seen in ship-building have in the aggregate enormously increased our means of defence as compared with the means possessed by France. I believe that our defensive power in times of crisis would develop itself with a rapidity, to an extent, and with an efficiency that would surpass all previous examples and would astonish the world. (Hear, hear.)

There is one other question that I should like to ask—What is the ground taken up by those gentlemen who point to our security as

the main matter which we have to consider? Do they mean on that ground to limit our communications with France? Do they mean, as in the time of Queen Anne, to "abate" our trade with France as being a thing mischievous in itself—a source of danger and insecurity? "No," says the right hon. gentleman opposite; "extend your communications to the uttermost; give every facility by which men and material can pass from one country to the other, but do not sanction the construction of this Tunnel." That is the plan of the right hon. gentleman. He proposes that the harbours of the country should be enlarged. He set no limit to the range of his philanthropy and enlightened views upon this matter. He has no apprehension upon this subject. Well, my apprehension is not great; but, if I am to conjure up any prospect of danger at all, I tell the right hon. gentleman deliberately that his plan of vast harbours and great ships, and of making the Channel a high road to be crossed with wonderful rapidity, presents ten times the danger that the prospects of the Tunnel ought to present to the most excitable mind. (Hear, hear.)

Now one word about the opinion of the military authorities. I am not going to speak of them with contempt; on the contrary, I must say that I have the deepest respect for the profession of the soldier, and especially for the function of the commander in the field, charged with the care of men and material in great masses, with the duty of making the most of the resources of his country, and with the enormously difficult task of bringing them to bear at particular points, at particular times, in particular circumstances, for the purposes of war. I deem that to be one of the highest and most extraordinary trials to which the human mind can be subjected, and I do not know any position in which the demand for energy and every great quality of manhood is equally tremendous and overpowering. Therefore, for Lord Wolseley, whom I believe to be a man extremely valuable to his country in the possible contingency of military danger and military effort, for him and the other military authorities I have the most profound respect; but

that respect is due to them chiefly in connection with operations of war and operations directly connected with war. In respect of operations not so directly connected with immediate war, I know that their judgment will always carry, and deserve to carry, much weight; but it is impossible to overlook the fact that military authorities are not infallible, and it often happens that the prescription which they recommend to you one day is disowned and reversed on another. We were told, for example, in 1860, that Lord Palmerston's fortifications would give us such security that we never need be alarmed again; but within the last few years we have had more poignant, startling, and costly alarms than have ever, perhaps, excited us before in times of peace, and those fortifications are regarded with the greatest indifference. If I am asked to believe that military authorities are infallible, if I am required to surrender my own poor judgment into their hands, I must quote the case of Alderney. If there is a creation on the face of the earth that is the creation of the military authorities, it is that which is now represented by the remnants and ruins, and shreds and tatters of the works at Alderney. (Hear, hear.) There are persons who say that all faults and deficiencies that are committed by the military authorities are due to the impertinent interference of civilians. Well, I had to do with the works at Alderney in the sense of yielding to the imperative demand of the military authorities of that day, and excellent and very distinguished men they were—Sir John Burgoyne, Lord Hardinge, and others. The first demand was, I think, for £150,000. They told us that if we would spend £150,000 at Alderney, Cherbourg would be sealed up so that no French fleet could issue from it. I agreed, accordingly, that that sum should be voted, but the matter did not end there. The sums demanded increased, until they almost reached, I think, a total of £2,000,000, and now there remain only the miserable fragments of that work, more like a monument of human folly than of human sense or skill. Although useless to us, perhaps the works will not be absolutely useless to any enemies